

TWA FLIGHT 800 INVESTIGATION

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STATEMENT OF
JAMES E. HALL
CHAIRMAN
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.
BEFORE THE
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON AVIATION
UNITED STATES HOUSE OF REPRESENTATIVES
STATUS OF THE INVESTIGATION OF THE CRASH OF TWA 800
JULY 10, 1997

Good morning Mr. Chairman and Members of the Subcommittee, and thank you for inviting me to appear before you to discuss the investigation of the TWA flight 800 accident. With me today at the table are Dr. Bernard Loeb, the Director of our Office of Aviation Safety, and Dr. Vernon Ellingstad, Director of our Office of Research and Engineering. Also, many of our investigators, who have worked virtually full time on this investigation for the past year, are with us here today.

Mr. Chairman, TWA 800 has been the most extensive investigative effort in the Safety Board's 30-year history. We have been on scene on Long Island for a full year, by far a record. The costs of recovering the victims and the wreckage from this tragedy have been high. Testing and research have been extensive, but we believe the money is well spent.

And, the American people can be proud of the selfless determination of hundreds of investigators from dozens of organizations, who have worked so diligently to find the cause of this tragedy.

I do not plan to dwell on too much historical information about the investigation today. The effort has been monumental – for example, the Systems Group has had over 40 experts covering the broad responsibilities of that group. That number is a fraction of the behind-the-scenes support being provided by the Safety Board, parties to the investigation, and outside specialists.

I would now like to describe to you where we are today with the investigation and where we are going in the near future.

Although much of the work in many of our investigative areas has been essentially completed – including operations, power-plants, maintenance records, structures, cabin reconstruction, medical factors, flight data recorder, cockpit voice recorder, trajectory analysis, and data base management – we still have months of tests and research ahead of us. Depending on future developments, we may reopen

certain investigative areas. Areas that have continuing work include aircraft systems and fire and explosion. I will talk more about those areas shortly.

Before we could get to this point in the investigation, a massive underwater search and recovery effort was necessary. Since diving operations began on July 18, 1996, there were 677 surface-supplied dives, 3,667 scuba dives, and 209 remotely operated vehicle dives. After the diving operations were completed on November 2, 1996, we employed contract trawlers with specially rigged nets to drag the ocean bottom. Trawling continued throughout the winter and early spring. Trawling ceased on April 30, 1997, and 85 randomly selected sites on the ocean bottom were videotaped to ensure that it was clear of wreckage. The activity ended on May 18.

The diving and trawling operations covered about 40 square miles of ocean floor. Literally thousands of items were recovered from the bottom of the ocean and brought to the hangar for study. We believe we have recovered between 95 and 98 percent of the airplane.

In January 1997, we began to reconstruct the center section of the airplane in order to be able to better demonstrate the relationship of the various pieces of structure and systems and the sequence of the breakup of the airplane. The full-scale reconstruction, which is about 94 feet long, is the largest ever completed in the world. It consists of almost 900 pieces of wreckage. It has been extremely beneficial to the investigation.

Mr. Chairman, I would now like to discuss our progress to date.

There is no evidence of a bomb or a missile impact in the wreckage.

Based on evaluation of the recovered wreckage and a detailed evaluation of the sequence of events, we have determined that the fuel/air vapor in the center fuel tank exploded and that the explosion of the tank initiated the breakup of the airplane. We have not yet determined what ignited the fuel vapor in the center tank.

The determination of the sequence of events was reached with the participation and agreement of the parties to the investigation, as well as outside specialists from the United States and overseas.

Our investigation continues to concentrate on two main areas. First, we are attempting to determine the ignition source of the fuel/air vapor in the center tank. Second, we are attempting to understand the composition and characteristics of the fuel/air vapor in the fuel tank. To accomplish these two tasks, extensive testing and research has either been completed or is under way. We have used a host of independent laboratories and facilities, and have not cut corners in seeking the best available resources. Let me detail some of the still ongoing work, starting with the problem of ignition.

Determination of what ignited the fuel/air vapor

There are generally six primary ignition scenarios or theories currently being pursued – all of which have been known to us for many months. We are examining each theory carefully and conducting laboratory experiments and other scientific tests that will help us decide which ignition scenarios might be ruled out.

I will now discuss each theory and describe how we are studying it.

Center tank scavenge pump—This scenario involves the potential for overheating or other ignition energy from a failure mode in the scavenge pump that has not been recovered. As to other pumps in the center fuel tank, we have examined the jettison pumps and found no evidence that they were involved in the ignition of the fuel/air vapor. These tests were conducted at the NASA facility in Huntsville, Alabama.

Although we have not recovered the scavenge pump from the accident airplane, we have conducted several tests on exemplar scavenge pumps. We also have researched the service history of the pump on the accident aircraft, specifically, and

scavenge pumps in general, to determine a possible failure scenario that could explain the accident.

Static electricity – This scenario involves the potential for generation of static electricity on an ungrounded component in the center fuel tank – Wiggins couplings or Adel clamps – that could lead to a spark and ignition of the fuel/air vapor. We have been conducting extensive laboratory tests at the Wright Laboratory at Wright-Patterson Air Force Base in Ohio, and at the Naval Research Laboratory in Maryland, to determine whether static electricity can be generated within the center tank sufficient to provide a spark that will ignite the fuel/air vapor. Additional static electricity tests are planned for the next few weeks. We also have in progress additional laboratory tests at Wright-Patterson involving fuel system components from TWA flight 800.

Fuel quantity indicating system – This scenario involves the potential for an electrical short circuit in an airplane wire bundle outside the tank that leads to a spark or overheating and ignition from a fuel quantity indication probe or compensator in the center fuel tank. We have *examined* the recovered portions of fuel probes from the center tank, the fuel pump cockpit switches, and other fuel system components in our laboratories and in the Wright Laboratory. We have conducted tests of exemplar fuel quantity probes at the Léar-Siegler factory in Seattle, Washington, to determine whether an electrical short circuit could be passed into the tank as an ignition source. We have also examined the wires, wire bundles, and wire conduits recovered from the TWA flight 800 wreckage.

No. 3 fuel tank electrical conduit – This scenario is related to a known history of deterioration of wires in an aluminum conduit that passes through the No. 3 fuel tank. The scenario involves the potential for a spark leading to ignition of vapor in the fuel tank vent tubes and the flame propagating to the center fuel tank. Examination of the wreckage has so far proved inconclusive, but this work continues. I will discuss shortly a flight test that will contain instrumentation to examine this theory.

Small explosive charge – This scenario involves the possibility that a small explosive charge detonated near the center fuel tank could lead to ignition of the fuel/air vapors. In August 1996, we learned about the availability at Brunthorpe in the United Kingdom of a retired Boeing 747 that was to be used for baggage container explosive hardening tests being conducted by the FAA and the Defense Evaluation and Research Administration of the U.K. This test was part of the research engendered by the bombing of Pan American flight 103 in 1988. We joined this effort to record and identify the sound spectral signatures of explosives when recorded on the cockpit voice recorder system.

In late July and early August, we will conduct additional tests on the Brunthorpe airplane. These will involve setting off small explosive charges in selected locations around the center wing tank to determine the damage that results and to make comparisons with the wreckage of TWA flight 800. If the center tank is not damaged significantly during those tests, we plan to conduct a full scale fuel/air explosion test.

High speed particle penetration – This scenario involves the possibility that a high speed fragment from a meteorite, space debris, or missile warhead could penetrate the center fuel tank and cause ignition.

In cooperation with the FBI, we have conducted tests and examinations of the wreckage to determine if a high speed fragment may have penetrated the center fuel tank and provided an ignition source. Test plates of aluminum were subjected to high speed penetration of various size particles and these specimens were compared to more than 150 holes found in the structures of TWA flight 800. Experts from Brookhaven Laboratories on Long Island assisted in this work, as did experts from the Naval Weapons Center at China Lake, California. To date, we have found no evidence of high speed particle penetrations; however, that work continues.

Determination of Conditions under which fuel/air vapors in fuel tanks are explosive and the minimum energy needed to ignite the vapors.

Besides the work to determine possible ignition scenarios, we have been conducting numerous tests, and more are planned, to better understand the flammability and explosive potential of Jet A fuel. I need to point out that very little is known about the composition and characteristics of Jet A fuel, despite its use for many years. We need to understand the characteristics of the fuel to evaluate its susceptibility to ignition and to understand the propagation of the explosion that caused the accident. For example, we would like to determine where the ignition took place in the center tank, how it propagated, and how the environmental conditions affected the event. If we can learn that, we might be closer to determining what the ignition source was, and we can develop more definitive corrective actions, both mechanical and environmental. We have met with specialists from throughout the world to assist us in this effort.

We recently leased a Boeing 747 for flight tests. The airplane has been instrumented with temperature and pressure sensors, and vapor sampling equipment to provide a detailed characterization of the environment in the center tank and the rest of the fuel system. It will be flown from JFK International Airport in the next day or two to determine the temperature profile and chemical composition of the fuel/air mixture in the center tank under conditions similar to those of TWA 800. We are being assisted by the University of Denver, and we trust that the data gathered from these flight tests will bring us closer to our goals of determining the cause of the accident and developing accident prevention measures.

We have been conducting tests at CalTech and the University of Nevada at Reno to determine the chemical characteristics of Jet A fuel under a variety of conditions. These tests include measurements of explosive temperatures, pressures, minimum ignition energy, and fuel vapor composition. We recently obtained fuel samples from Athens, Greece to compare with samples taken from an airplane that has flown from Athens to JFK. Those samples will also be examined to determine if the characteristics of the fuel change during flight.

Of course, we had analyzed fuel samples from both JFK and Athens immediately after the accident.

Once we have determined the chemical composition of the fuel/air vapor, we plan to conduct scale model tank explosion tests assisted by experts from CalTech and other laboratories. We have already conducted small-scale explosion tests using a single chamber test vessel. Because the Boeing 747 center fuel tank is a more complex structure, we need to evaluate the effects of its multiple interconnected compartments on the ignition and explosion physics. Depending on the results of these scale tests, we may conduct full-scale tests in which we will blow up one or more center tanks salvaged from retired Boeing 747s.

Concurrently with the explosion tests, we plan to conduct computer modeling of the fuel/air explosions to better understand the propagation of an explosion and the consequent pressures produced throughout the Boeing 747 center tank.

Mr. Chairman, I need to point out that all of these tests that I have briefly described are extremely complex and nothing of this magnitude has ever been conducted before by the Safety Board. Because of the highly technical nature of the tests, and the potential danger posed to those conducting them, each phase of each test is very time-consuming.

I believe that the flight tests that are ongoing this week, the tests in the United Kingdom, and other tests at various universities and laboratories will bring us closer to our goal of preventing similar accidents in the future.

Lastly, as we do in all major airline accidents, the Safety Board is developing plans to hold a public hearing on this accident in December in Baltimore, Maryland. Excellent facilities are available, and Baltimore is a convenient location for many family members and other participants. At that public hearing, we plan to take sworn testimony on all of the relevant issues related to this tragic accident. However, we cannot open a public docket and conduct a public hearing concerning the evidence we

Have gathered until the FBI declares that it is no longer conducting a criminal investigation into the loss of TWA flight 800. We anticipate that they may do so in the near future.

Though this investigation is still ongoing, the Safety Board issued four safety recommendations to the FAA that urged both short-term and long-term actions to reduce the potential for a fuel/air vapor explosion in the center fuel tanks of Boeing 747s, as well as in fuel tanks of other aircraft. We suggested possible means to reduce the explosive potential of the fuel vapor, such as adding cold fuel to the center tank before takeoff, providing insulation or other methods to reduce the transfer of heat from the air conditioning units beneath the center tank, or inerting the tank by replacing the explosive vapor with a harmless gas.

FAA responded with a request for public comments in the *Federal Register*, posing questions that it wanted answered by the aviation industry and the scientific community before it acted on those recommendations. The comment period closes August 1. The FAA stated that it was concerned that the safety recommendations proposed major changes in requirements for fuel tank design and fuel management in transport category airplanes because the current airworthiness standards of the Federal regulations assume that the fuel vapor (ullage) in the fuel tanks is flammable. Current design and certification requirements concentrate on the elimination of ignition sources. However, we are asking for an additional safeguard – control or elimination of flammable vapors.

NTSB agrees with FAA that there are questions in need of answers before agreement on long-term prevention can be reached. We anticipate working closely and cooperatively with FAA to develop long-term solutions. But, we also believe that more could be done in the interim to reduce the possibility of another fuel tank explosion in the meantime. The probability is already very low, but if it might be made lower, without significant cost, we believe that effort should be made. Consequently, on July 1, 1997, the Safety Board classified the FAA's response to the short term recommendations as "unacceptable."

As you know, Mr. Chairman, our issuance of recommendations before completion of an investigation is not unusual; in fact, it occurs quite often. We issued recommendations 7 days after the Roselawn, Indiana ATR crash in 1994, and 20 days after the ValuJet crash into the Everglades last year. We issued recommendations following the Sioux City, Iowa DC-10 crash on 4 separate occasions before our final report was adopted, the first less than a month after the accident.

In addition, it is our regular practice to classify the responses to our recommendations. There are currently 358 open recommendations to the FAA, 31 of them – less than 9 percent – are currently classified as unacceptable response or action.

Mr. Chairman, the Safety Board is fully aware that the safety record of the Boeing 747 and many other airplanes over the past few decades has been excellent, and fuel tank explosions have been extremely rare events. However, the evidence gathered during the investigation of TWA Right 800 and from other previous accidents indicates that they do occur and that extraordinary steps may need to be taken to prevent similar accidents.

Our senior staff and investigators have been meeting regularly with the FAA and Boeing engineers, as well as outside specialists, to discuss the complex questions that have been raised by this tragic accident and to develop appropriate solutions. We all remain committed to determining the ignition source of the fuel/air vapor in the center tank of TWA flight 800. However, we also believe it is imperative to initiate steps toward the reduction of explosive vapor in fuel tanks. We will continue to work closely with the FAA and Boeing to devise corrective measures in a timely manner.

Mr. Chairman, let me make something very clear about these recommendations. We are not saying that our short-term recommendations would prevent every accident in the future, but we do believe that they would have prevented the TWA flight 800 accident and some of the previous accidents involving explosive fuel/air vapors.

Before I close, I would like to mention that, as part of the Safety Board's new role related to families of victims of airline accidents, we will be assisting the families in memorializing the first anniversary of the TWA Flight 800 accident next week. Several days of activities have been planned by the family organizations, and they are being supported by units of local, state and the Federal government. Many other organizations from Long Island that were part of the search and recovery efforts are also assisting the families. At the families' request, we will provide them access to view the reconstructed wreckage at Calverton and to answer questions about the progress of our investigation. We expect about 750 family members to participate.

I now would be pleased to answer any questions that you may have.

STATEMENT OF

JAMES K. KALLSTROM
ASSISTANT DIRECTOR IN CHARGE
NEW YORK OFFICE
FEDERAL BUREAU OF INVESTIGATION

BEFORE THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON AVIATION
UNITED STATES HOUSE OF REPRESENTATIVES

STATUS OF THE INVESTIGATION OF THE CRASH OF TWA 800

JULY 10, 1997

Mr. Chairman, Members of the Committee

Thank you for inviting me to be here today to represent the FBI and to give you a broad overview of the FBI's investigation of the tragedy of TWA Flight 800. As this matter continues to be an active criminal investigation on our part, I know you will appreciate the restrictions that are placed on me and the FBI and will understand the limits this fact may impose on my statements and responses.

When this catastrophic tragedy happened on the night of July 17, 1996, and after initial information indicated that all communications from TWA Flight 800 were normal and that no distress calls were issued, the FBI, as well as I would suspect most of the world, believed that there was a possibility that this tragedy was the work of criminals or terrorists. As you are aware, for the first few hours following this tragedy, over 300 individuals reported seeing events in the sky associated with the TWA Flight 800 disaster. That is why the FBI and the law enforcement team acted, and acted quickly, to begin a massive, thorough, criminal investigation. If there was ever a chance that this catastrophe was criminal, it was critical that the proper investigation take place immediately.

From the beginning, the FBI's investigative purpose has been to reach what I have called in the past -- critical mass -- to gather sufficient evidence to allow us to state, with a high

degree of certainty, whether this tragedy was the result of a criminal act and, if so, determine who was responsible and bring them to justice. Our efforts have been and continue to be focused on two primary criminal theories - that the destruction of Flight 800 was the result of a bomb placed on the aircraft or a missile fired at it. The FBI's investigation has been one of the most massive, thorough, sophisticated and costly ever conducted by our agency. The FBI has expended tens of thousands of hours of Agent resources participating in body recovery operations, wreckage recovery, storage and scientific examination and analysis by FBI scientists as well as outside experts. Part of this effort has been the largest reconstruction of an aircraft ever undertaken. To date, the FBI has conducted over seven thousand interviews. Our investigation has included interviews of ground crews and-, mechanics in New York and Athens, passengers and crew who were on the flight from Athens to New York that preceded Flight 800, hundreds of witnesses on Long Island and surrounding areas, witnesses on other aircraft who observed the explosion and military personnel; a review of information available from intelligence assets; tracking of all air and water borne vessels in the area at the time of the explosion followed by appropriate interviews and tracing of all reports of stolen boats, stolen motor vehicles and suspicious incidents during the period of time preceding and after the tragedy. In short, our investigative efforts have been exhaustive.

All of our efforts to date have failed to uncover any

credible evidence that the lose of Flight 800 was the result of a criminal act. Let me again reiterate something I told the Committee in the briefing several months ago and what I have also stated publicly - Flight 800 was definitely not brought down by "friendly fire", that is, no missile or any other action by the military and naval forces of the United States caused this tragedy.

We continue to examine the possibility that the aircraft was destroyed by a bomb, a terrorist missile or other criminal act. Each day, we move closer to completing leads and other lines of inquiry seeking to close out theories and resolve the questions of possible criminal activity. We have not reached the end of our investigative process and the theories of a bomb or terrorist missile, along with the possibility of mechanical failure, are still on the board.

Barring some new disclosure or information, we are now in the final phase of our investigation. We have several lines of inquiry or action items left to complete so that we can ensure we have covered every base and that the families of the victims and the American people will be confident that our ultimate determination is based on the most thorough, exhaustive and finest investigative effort that the FBI can produce. For example, we have identified, catalogued and are conducting a close scientific examination and analysis of almost 200 holes, slits, punctures or penetrations identified in the reconstructed

areas of the aircraft. We expect that the metallurgical analysis and our other remaining leads may be completed as early as 60 to 90 days from today. However, as I stated earlier, none of the analysis completed to date has uncovered any evidence of a crime.

In the next 60 days we expect to have the final results of a sophisticated analysis of the statements of witness who reported seeing what has generally been characterized as something ascending into the sky followed by an explosion. This analysis, which includes correlation of what the witnesses saw, what they heard, and their locations with known radar trackings of the aircraft, is extremely detailed and has involved a number of reinterviews. When completed, we believe this analysis, will provide a clear understanding of these-critical eyewitness observations.

Mr. Chairman, throughout this entire investigation, the cooperation between the FBI, NTSB, the FAA, the ATF, state and local agencies, and the other members of the law enforcement team has been nothing but superb. In my entire career in law enforcement, I have worked many, many major investigations involving multiple agencies and I can tell you, Mr. Chairman, and the other members of this Committee, that I have never seen a case of this significance with this many agencies where the cooperation, professionalism and "can do" attitude was better displayed. The American people can be proud of the dedicated men

and women that have labored for almost one year from all the agencies and organizations with one idea in mind, and that is to find the cause of this horrendous tragedy.

To sun up, Mr. Chairman, we have a number of significant investigative, scientific and analytical initiatives which we hope to complete within the next 60 to 90 days and, to date, the FBI's exhaustive investigative efforts have not uncovered any evidence that the destruction of Flight 800 resulted from a criminal act. I thank you for your time and I would be happy to answer questions from the Committee.

Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

COMMITTEE:
TRANSPORTATION AND
INFRASTRUCTURE
SUBCOMMITTEES
RANKING DEMOCRAT: PUBLIC BUILDINGS
AND ECONOMIC DEVELOPMENT
AVIATION
COMMITTEE:
SCIENCE
SUBCOMMITTEE:
SPACE

July 23, 1997

Mr. James K. Kallstrom
Assistant Director in Charge
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New York, New York 10278-0004

Dear Mr. Kallstrom:

As you recall, at the July 10th hearing I asked you several questions regarding the Federal Bureau of Investigation's investigation of the July 17, 1996 crash of TWA Flight 800. I appreciate your taking the time to appear before the subcommittee. Unfortunately, I only had five minutes to ask questions. I have a number of additional questions, and would appreciate it if you could respond in writing as soon as possible. The questions are listed below.

- 1) Has the FBI interviewed all of the known witnesses of the crash, including those who were interviewed by the media?
- 2) How extensively did the FBI question the Air National Guard helicopter pilot who witnessed the event?
- 3) You noted in your written testimony that "...over 100 individuals reported seeing events in the sky associated with the TWA Flight 800 disaster." Has the FBI interviewed all of these witnesses? How many of these witnesses reported seeing an object ascending towards TWA Flight 800 or ascending in the sky'!
- 4) Did the FBI and the National Transportation Safety Board (NTSB) make a coordinated effort to canvass and interview witnesses *in* the days and weeks following the crash?
- 5) How many personnel did the FBI field on Long Island within 24 hours of the crash?
- 6) You also stated in your written testimony that the FBI has not yet "...uncovered any evidence that the destruction of Flight 800 resulted from a criminal act." Is it also true that there is, to date, no concrete evidence that the flight was destroyed because of a mechanical failure?
- 7) While you have maintained that there is no evidence that the flight was destroyed as a result of a missile, how do you characterize the eyewitness testimony of at least 30 individuals who saw an object ascending towards or near TWA Flight 800?

(next page)

- 8) You noted in your written testimony that the FBI is conducting "...a close scientific examination and analysis of almost 200 holes, slits, puncture or penetrations identified in the reconstructed areas of the aircraft." Has this analysis resulted in the FBI ruling out the possibility that the holes, slits, punctures and penetrations were caused by pieces of shrapnel from a missile warhead or shrapnel from some type of high-velocity explosive (e.g., a bomb)?
- 9) The subcommittee has received testimony from both the NTSB and the FBI that no concrete evidence has been uncovered to indicate that the plane was destroyed due to mechanical failure. Both the NTSB and the FBI maintain that, in addition to mechanical failure, a missile or a bomb could have been the cause. If this is the case, why have officials from the NTSB and FBI publicly pointed to mechanical failure as the likely cause of the crash?
- 10) If it is true that there is no forensic evidence indicating a mechanical failure, and no evidence discounting a missile, why wouldn't the FBI and the NTSB give more serious attention to the likelihood that TWA Flight 800 was brought down by a missile – especially in light of the eyewitness testimony and the unexplained punctures found on parts of the aircraft?
- 11) If no forensic evidence is found that the plane was destroyed due to mechanical failure, does the FBI intend to continue investigating the crash?
- 12) Is the FBI aware of any threats made against U.S. airlines, the United States or France in the months and weeks leading up to the crash?
- 13) Have any terrorist groups claimed responsibility for the crash?
- 14) How closely has the FBI worked with the Central Intelligence Agency and other members of the U.S. intelligence community to examine the possibility that TWA Flight 800 was destroyed as the result of a terrorist act perpetrated by a domestic or foreign terrorist organization?
- 15) Is it true that in the days following the crash the FBI seized radar tapes made by Sikorsky Helicopter of Bridgeport, Connecticut? If true, did the FBI have a warrant to seize the tapes? Have the tapes been analyzed? Do the tapes show any evidence of a missile launch? Will the FBI return the tapes to Sikorsky?
- 16) What steps were taken to preserve evidence from the crash? Was the wreckage immediately checked for explosive residue as it was brought up from the ocean?
- 17) I have seen media reports that, in many instances, wreckage was washed extensively with a forceful stream of water. Is this true?

(next page)

Mr. James K. Kallstrom
July 23, 1997
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- 18) If, in fact, the wreckage was rinsed with a forceful stream of water to remove the saltwater, wouldn't this have also dislodged a good portion of evidence such as residue from an explosive device?
- 19) You stated in your response to one of my questions that the FRI has determined that TWA Plight 800 was in fact the same aircraft that was used in a dog training exercise in St. Louis two weeks before the crash. Does the FRI have verifiable and concrete evidence that TWA Flight 800 was definitely tested in St. Louis? Is the FBI willing to share this evidence with the committee?

Respectfully,

A handwritten signature in black ink, appearing to be 'J. Traficant', written in a cursive style.

James A. Traficant, Jr.
Member of Congress

JAT/pm

c: The Honorable John J. Duncan, Jr.
The Honorable William Lipinski

JAMES A. TRAFICANT, JR.
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Congress of the United States
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July 25, 1997

COMMITTEE:
TRANSPORTATION AND
INFRASTRUCTURE
SUBCOMMITTEES
RANKING DEMOCRAT: PUBLIC BUILDINGS
AND ECONOMIC DEVELOPMENT
AVIATION
COMMITTEE:
SCIENCE
SUBCOMMITTEE:
SPACE

Mr. James E. Hall
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, S.W.,
Washington, D.C. 20594

Dear Chairman Hall:

At the July 10, 1997 hearing of the Transportation and Infrastructure Subcommittee on Aviation I asked you several questions regarding the NTSB's investigation of the July 17, 1996 crash of TWA Flight 800. I appreciate your taking the time to appear before the subcommittee. Unfortunately, I only had five minutes to ask questions. I have several additional questions, and would appreciate it if you could respond in writing as soon as possible. The questions are listed below.

1) I understand that the NTSB conducted a test in August of 1996 in the Mojave Desert on the fuel tank temperature of a 747. Has the NTSB conducted any tests to recreate, as close as possible, the type of weather conditions that TWA Flight 800 experienced on July 17, 1996 in the hours prior to the crash? If yes, what were the results of these tests?

2) Some NTSB officials have stated that the number three fuel tank may have been the ignition source for the explosion, and that three of the four engines were drawing fuel from the number three tank. If this is, in fact, the theory being expounded by the NTSB, is this standard operating procedure for a '747'.

3) Has the NTSB been able to find any example of a fuel tank explosion in an airborne commercial jet aircraft that was ignited by an internal ignition source?

4) Is it true that an official from the NTSB asserted to ABC News "Primetime" that an old wiring problem on U.S. Navy jets related to saltwater corrosion was reason to suspect a wiring problem on a 747 was a possible internal ignition source for the explosion in TWA Flight 800? If true, what evidence does the NTSB have that the wiring system in a Navy jet is similar to that of a 747, and that the wiring in a 747 is susceptible to the same type of corrosion as that of a Navy jet?

(next page)

Mr. James E. Hall

July 25, 1997

Page Two

- 5) You indicated at the July 10th hearing that the NTSB has not yet uncovered any physical evidence of a mechanical malfunction. At the same time, the NTSB has not been able to rule out the possibility that the crash caused by a missile or explosive device. If this is the case, why has the NTSB, on several occasions, indicated to the media that the likely cause of the crash was mechanical malfunction?
- 6) Given the lack of physical evidence of a mechanical malfunction, and given the large number of eyewitnesses who saw an object ascending towards TWA Flight 800 pp9r to its explosion, why hasn't the NTSB given more credence to the missile theory?
- 7) To follow-up on question #6, why is the NTSB conducting extensive and expensive tests to determine the plausibility of mechanical malfunction, but not conducting tests to examine the plausibility of a missile or explosive device as the cause of the crash?

Thank you for your cooperation. I look forward to your prompt response.

Respectfully,

A handwritten signature in black ink, appearing to be "J. Traficant", written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/prn

c: The Honorable John J. Duncan, Jr.
The Honorable William Lipinski



National Transportation Safety Board

Washington, DC 20594

August 20, 1997

1967-30 Years of Transportation Safety ~ 1997

Office of the Chairman

Honorable James A. Traficant, Jr.
House of Representatives
Washington, D. C. 20515

Dear Congressman Traficant:

This is in response to your July 25, 1997, letter regarding my July 10, 1997, appearance before the Committee on Transportation and Infrastructure, Subcommittee on Aviation. You forwarded with your letter additional questions for the record regarding the National Transportation Safety Board's investigation of the accident involving TWA flight 800. Below are the Safety Board's responses to your questions.

1. I understand that the NTSB conducted a test in August of 1996 in the Mojave Desert on the fuel tank temperature of a 747. Has the NTSB conducted any tests to recreate, as close as possible, the type of weather conditions that TWA Flight 800 experienced on July 17, 1996 in the hours prior to the crash? If yes, what were the results of these tests?

Response: In August 1996, the Boeing Commercial Airplane Group (BCAG) conducted a test in the Mojave desert to measure the temperature inside a Boeing 747 fuel tank. This test was conducted by BCAG to develop a "quick" answer to the temperatures in the center fuel tank. Only one temperature probe was used in the test. The Safety Board was not involved in this test but was provided data by BCAG. The Safety Board staff believed the test was not accomplished with sufficient detail to provide the specific data needed to understand the complex thermodynamic processes inside the tank.

The Safety Board completed in July a series of flight tests to more fully determine the temperature and conditions in a Boeing 747 fuel tank during normal operations. The airplane's center fuel tank was instrumented with over 150 sensors, and at various points in the flight fuel/air samples were withdrawn from the tank for laboratory analysis. These tests included operating the airplane on a flight profile similar to that of TWA Flight 800. In that test, the airplane was flown at altitude for several hours to reduce the temperature of the center fuel tank. After landing, two of the air conditioning packs were operated for two hours to simulate the ground operation of TWA Flight 800. The airplane then departed at approximately the same time as TWA Flight 800 and flew the same flight profile.

2. Some NTSB officials have stated that the number three fuel tank may have been the ignition source for the explosion, and that three of the four engines were drawing fuel from the number three tank. If this is, in fact, the theory being expounded-by the NTSB, is this standard operating procedure for a 747?

Response: The cockpit voice recorder tape provides that at the time of the accident, the flightcrew was cross feeding fuel in order to improve the lateral trim of the airplane. This is a standard procedure for the Boeing 747 to correct a fuel imbalance. The theory is that a short circuit in the wiring in the #3 tank resulted in a flame front that traveled out the wing surge tank and then back through the center tank vent tube where it ignited the fuel/air vapor in the center fuel tank. This is one of several theories being examined in the Safety Board's investigation. The Federal Aviation Administration recently sent a letter to the Safety Board requesting special consideration of this theory, as recent inspections found evidence of chaffing in the #3 fuel tank wiring in other Boeing 747s.

3. Has the NTSB been able to find any example of a fuel tank explosion in an airborne commercial jet aircraft that was ignited by an internal ignition source?

Response: The Safety Board is aware of one accident involving a U.S. Air Force 707, and 3 accidents involving a U.S. Air Force KC-135 (a military version of the 707) that involved an in-flight explosion of a fuel tank due to an internal ignition source. All of these accidents were caused by electrical short circuits. Additionally, there was no evidence of an external event that caused the 1990 explosion of the center fuel tank of the Philippines Boeing 737 as it was preparing to start its engines to leave the gate. All indications are that either the friction in the fuel boost pump or a short in the float switch wiring was the ignition source in that accident.

4. Is it true that an official from the NTSB asserted to ABC News "Primetime" that an old wiring problem on U.S. Navy jets related to saltwater corrosion was reason to suspect a wiring problem on a 747 was a possible internal ignition source for the explosion in TWA Flight 800? If true, what evidence does the NTSB have that the wiring system in a Navy jet is similar to that of a 747, and that the wiring in a 747 is susceptible to the same type of corrosion as that of a Navy jet?

Response: The gentleman that appeared on "Prime Time" and discussed the problems with wiring on Navy airplanes was not a Safety Board employee or consultant. He was apparently hired by "Prime Time" for the show. Numerous airplanes, including Navy jets and the Boeing 747 series, have "poly-X" coating as the wiring insulation material. There has been considerable discussion and debate that the "poly-X" coating becomes brittle with age, which could result in cracks forming in the coating that could lead to a short circuit or arcing. The Safety Board's investigation considered this theory, and all wiring recovered has been examined for evidence of cracks or arcing.

5. You indicated at the July 10th hearing that- the NTSB has not yet uncovered any physical evidence of a mechanical malfunction. At the same time, the NTSB has not been able to rule out the possibility that the crash was caused by a missile or explosive device. If this is the case, why has the NTSB, on several occasions, indicated to the media that the likely cause of the crash was mechanical malfunction?

Response: The examination of the wreckage and autopsies of victim remains provide no evidence of a bomb detonation inside the airplane or of a missile impact. The Safety Board's investigation is considering the remote possibility of a missile warhead detonating some distance from the airplane and a fragment of the warhead penetrating the center fuel tank. Several tests are being conducted by the Safety Board to develop documentation of the effects of a small explosive to determine if any of the wreckage from TWA flight 800 shows similar characteristics.

Additionally, an extensive examination of the small holes in the fuselage and fuel tank has been accomplished for evidence of a missile fragment penetration. The investigation has determined that the explosion of the center fuel tank resulted in the structural failure of the airplane. The investigation also indicates that if an explosive vapor had not existed in the center fuel tank, the airplane could have continued controlled flight.

It should also be noted that to our knowledge neither the FBI nor any other law enforcement or security agency have reported any evidence pointing to criminal activity in this tragedy.

6. Given the lack of physical evidence of a mechanical malfunction, and given the large number of eyewitnesses who saw an object ascending towards TWA Flight 800 prior to its explosion, why hasn't the NTSB given credence to the missile theory?

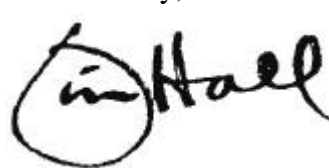
Response: As stated above, the examination of the wreckage provides no evidence of a missile impact. The Safety Board and the Federal Bureau of Investigation have interviewed numerous eye witnesses. The closest eye witness to the event was over 10 miles from the accident site. At such a distance, it is unlikely that any eye witness could see an object as small as a missile or even the smoke tail from an anti-aircraft missile. Most of these witnesses reported that the sound of an explosion or a flash of light drew their attention to the direction of the airplane. Please be assured that the Safety Board has not discounted the witness statements, and we are correlating their statements with the other factual material that has been gathered in the investigation.

7. To follow-up on question #6, why is the NTSB conducting extensive and expensive tests to determine the plausibility of mechanical malfunction, but not conducting tests to examine the plausibility of a missile or explosive device as the cause of the crash?

Response: The Safety Board's investigation has considered every conceivable event that could have resulted in this tragedy, including criminal intent such as a bomb or a missile. The investigation has even considered the possibility of a meteor or "space junk" impact. The Safety Board's investigators have conducted extensive metallurgical examinations and forensic examinations in the TWA flight 800 investigation in an effort to determine if there was any evidence of criminal intent. The Safety Board is now conducting a series of tests to develop the documentation of the effects of a small explosive to determine if any of the wreckage from TWA flight 800 shows similar characteristics.

I trust the above is responsive. If you have additional questions, or if we can be helpful to you at any time in the future, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Hall", is written over a vertical line. The signature is stylized, with the first name "Jim" written in a cursive script and the last name "Hall" in a more formal, slightly cursive script.

Jim Hall
Chairman



U.S. Department of Justice

Federal Bureau of Investigation

In Reply, Please Refer to
File No.

26 Federal Plaza
New York, New York 10278
September 5, 1997

Honorable James A. Traficant
U.S. House of Representatives
2446 Rayburn House Office Building
Washington, D.C. 20515-3517

Dear Representative Traficant,

Enclosed please find my responses to questions to your written questions for inclusion in the record of the hearing before the Aviation Subcommittee on July 10, 1997. A copy of these responses is being forwarded under separate cover to Chairman Duncan at the Aviation Subcommittee.

If you have any questions regarding these responses, please do not hesitate to contact me directly at (212) 384-2710.

Sincerely,

A handwritten signature in dark ink, appearing to read "James K. Kallstrom", is written over a light, circular, textured background.

James K. Kallstrom
Assistant Director in Charge

RESPONSE TO QUESTIONS FROM REPRESENTATIVE TRAFFICANT

Question

1) Has the FBI interviewed all of the known witnesses of the crash, including those who were interviewed by the media?

Response

The FBI and other agencies in the coordinated law enforcement team interviewed over 400 witnesses, at least once, regarding their observations on the evening of July 17, 1996. The FBI advertised telephone numbers for witnesses to contact the FBI as well as a FBI e-mail address for anyone with information regarding the crash to contact our office. Individuals interviewed included those who came forward, were mentioned or referenced by another witness, were identified from media reports or who were contacted as the result of a massive canvass of the Long Island area by law enforcement personnel on the night of the event and the days immediately thereafter. Those interviewed encompass all the known witnesses to the crash.

Question

2) How extensively did the FBI question the Air National Guard helicopter pilot who witnessed the event?

Response

The entire crew of the New York Air National Guard (NYANG), 106 Aerospace Rescue Squadron HH 60 helicopters, which included two pilots and an engineer, were interviewed. The two pilots on board were interviewed more than once. In addition, the FBI interviewed a pararescue EMT who was not on the initial flight but who had been airlifted to the crash site to aid in any rescue attempts.

The New York Air National Guard 106, Aerospace Rescue Squadron also has a C-130 aircraft in the air on July 17, 1997. They participated in the rescue attempt. The crew of the C-130 were also interviewed. Ground personnel assigned to the Air National Guard were also interviewed.

Question

3) You noted in your written testimony that "...over 100 individuals reported seeing events in the sky associated with the TWA Flight 800 disaster." Has the FBI interviewed all these witnesses? How many of these witnesses reported seeing an object ascending towards TWA Flight 800 or ascending in the sky?

Response

The FBI interviewed over 400 individuals who reported seeing something in the sky in the vicinity of the crash of TWA Flight 800. Of these, 115 reported seeing something ascend into the sky and of these 115, only three reported seeing something ascend towards a second object.

Question

4) Did the FBI and the National Transportation Safety Board (NTSB) make a coordinated effort to canvass and interview witnesses in the days and weeks following the crash?

Response

At their initial meeting on the morning of July 18, 1996 at the Center Moriches Coast Guard Station, which was the forward command post for the search, rescue and salvage operation, ADIC James K. Kallstrom and Bob Francis, Vice-Chairman of the NTSB agreed to conduct simultaneous investigations and that all information developed would be shared between the two agencies. The FBI's role was to be the lead criminal investigative agency seeking to determine if the crash of Flight 800 was the result of a criminal act.

In the first four weeks following the crash of TWA Flight 800, the FBI and the law enforcement team conducted approximately 860 interviews. Among those interviewed were witnesses who called in to report that they had observed events in the sky, air crews that reported seeing something in the sky, witnesses identified from news media interviews, individuals developed in canvasses of neighborhoods and apartment complexes for potential witnesses and occupants of boats and shipping vessels in the area. To date approximately 7,000-law enforcement interviews have been conducted in connection with the TWA flight 800 investigation. The NTSB did not participate in most of these interviews because they did not have the personnel resources available. However, all interview/witness statements have been shared with the NTSB and, after reviewing the results of initial interviews, the FBI and NTSB created a Witness Group Panel. The purpose of the witness group was to conduct joint interviews of individuals who previously provided information to the FBI about mechanical related issues and events observed in the sky on 7/17/96.

Question

5) How many personnel did the FBI field on Long Island within 24 hours of the crash?

Response

Within 24 hours, approximately 400 FBI Special Agents, Detectives assigned to the FBI/New York City Police Department Joint Terrorist Task Force along with Special Agents, Detectives and Investigators from other Federal, state and local law enforcement agencies were working full-time on Long Island investigating the incident. These included approximately 150 law enforcement personnel working from and reporting to the East Mauritius Command Center, 50 conducting interviews and investigation at Kennedy Airport, 50 conducting investigation from Westhampton Beach and 150 working from and reporting to the FBI s New York Command Center.

These totals do not include Special Agents who responded to the scene as Evidence Response Team members or helicopter pilots.

Question

6) You also stated in your written testimony that the FBI has not yet "...uncovered any evidence that the destruction of Flight 800 resulted from a criminal act." Is it also true that there is, to date, no concrete evidence that the Flight was destroyed because of a mechanical failure?

Response

As stated in my written testimony, all of the FBI s investigative efforts to date have failed to uncover any credible evidence that the loss of Flight 800 was the result of a criminal act. Investigation of possible mechanical causes for the crash is the responsibility of the National Transportation Safety Board (NTSB), which, to date, has not made any official determination that the crash was the result of mechanical failure.

Question

7) While you have maintained that there is no evidence that the flight was destroyed as a result of a missile, how do you characterize the eyewitness testimony of at least 30 individuals who saw an object ascending towards or near TWA Flight 800?

Response

As noted in response to question #3, 115 individuals reported seeing something ascend into the sky and of these, only three reported seeing something ascend towards a second object. The FBI, with technical assistance from the Central Intelligence Agency (CIA) is in the final stages of a detailed and sophisticated analysis of more than 200 eyewitness accounts. This effort has involved the reinterview of a number of witnesses and includes correlation of the witness locations and what they described seeing and hearing with known information, such as the radar trackings of the aircraft and the information from the cockpit recorders. We expect that this analysis will be completed in the next thirty to forty-five days and that it will provide a clearer understanding of the eyewitness accounts.

Question

8) You noted in your written testimony that the FBI is conducting "... a close scientific examination and analysis of almost 200 holes, slits, punctures or penetrations identified in the reconstructed areas of the aircraft." Has this analysis resulted in the FBI ruling out the possibility that the holes, slits punctures and penetrations were caused by pieces of shrapnel from a missile or warhead or shrapnel from some type of high-velocity explosive (e.g. bomb)?

Response

The possibility of a bomb or missile downing Flight 800 has not been ruled out at this time. In addition to examination by the FBI, the above mentioned holes, slits, punctures/penetrations are being further examined and analyzed by an outside expert metallurgist contracted to the FBI. This task is expected to be complete on or about September 30, 1997.

Question

9} The subcommittee has received testimony from both the NTSB and the FBI that no concrete evidence has been uncovered to indicate that the plane was destroyed due to mechanical failure. Both the NTSB and the FBI maintain that, in addition to mechanical failure, a missile or a bomb could have been the cause. If this is the case, why have officials from the NTSB and FBI publicly pointed to mechanical failure as the likely cause of the crash?

Response

Both the FBI and the NTSB have publicly stated and continue to state that all three theories, a missile, a bomb or mechanical failure are possible causes for the crash of Flight 800. In some public statements, FBI officials have stated, based on the FBI's extensive investigation and the lack of any evidence to date that Flight 800's crash was the result of a missile or a bomb, the likelihood of finding such evidence in the future diminishes as we daily complete leads and other lines of inquiry seeking to close out theories and resolve questions of possible criminal activity. As avenues of investigation are completed with no evidence of a missile or a bomb, it becomes more likely that the cause of the crash will be determined to be mechanical. However, that determination can not be made until all of the investigation is done. Important aspects of our investigation remain to be completed and we have not, reached the end of our investigative process. Therefore, the theories of a bomb or terrorist missile, along with the possibility of mechanical failure, are still on the board.

Question

10) If it is true that there is no forensic evidence indicating a mechanical failure, and no evidence discounting a missile, why wouldn't the FBI and the NTSB give more serious attention to the likelihood that TWA Flight 800 was brought down by a missile -- especially in light of the eyewitness testimony and the unexplained punctures found on parts of the aircraft?

Response

From the night of July 17, 1996, the FBI and the NTSB have both seriously considered the possibility that TWA Flight 800 was brought down by a missile. Since such a scenario would be a criminal act, the FBI has taken the lead in conducting this aspect of the investigation. To that end, the FBI has conducted interviews of over 400 witnesses who reported seeing something in the sky and has reinterviewed a number of them in connection with an analysis of their accounts undertaken by the FBI with technical assistance from the Central Intelligence Agency (CIA).

That analysis, which is detailed and sophisticated, includes correlation of the witness locations and what they described seeing and hearing with known information, such as the radar trackings of the aircraft and the information from the cockpit recorders. This project has involved nine individuals working on it exclusively for almost eight months.

In addition, the FBI continues to conduct a detailed analysis of the punctures found on the aircraft and has retained the services of an outside expert metallurgist to assist in this aspect of the investigation. We have worked closely with the CIA; The United States Navy Research Laboratory at China Lake, California; the Defense Intelligence Agency's Missile and Space Intelligence Center; the United States Air Force's Wright Laboratories; the Department of Energy's Sandia National Laboratory, the Federal Aviation Administration (FAA), and, of course, the National Transportation Safety Board (NTSB). Our effort included spearheading a series of tests regarding missile damage and target acquisition with respect to commercial aircraft.

Given the personnel and financial resources dedicated to the investigation and analysis of the possibility that TWA Flight 800 was brought down by a missile, one can only describe the attention to this theory as extremely serious.

Question

11) If no forensic evidence is found that the plane was destroyed due to mechanical failure, does the FBI intend to continue investigating the crash?

Response

The FBI will continue to investigate the crash of Flight 800 until we are satisfied that we have covered every base, conducted all logical investigation and are confident that our ultimate determination is based on the most thorough, exhaustive and finest investigative effort that the FBI can produce. Once all of our investigative processes are complete and assuming that we uncover no credible evidence of a criminal act, we will continue to maintain a presence, monitoring the results of NTSB's inquiry and providing whatever assistance we can to their efforts.

Question

12) Is the FBI aware of any threats made against U.S. airlines, the United States or France in the months and weeks leading up to the crash?

Response

Unfortunately, in this day and age, The FBI and the United States Government regularly receive numerous threats against United States interests both here and abroad. Generally, these threats are vague and non-specific. After careful review, the FBI is not aware of any specific threats directed at U.S. airlines, TWA in particular, or the United States in the months and weeks leading up to the crash that can be related to this tragedy. Likewise, we have no information from French authorities of any threats against France, its citizens or its interests.

Question

13) Have any terrorist groups claimed responsibility for the crash?

Response

In the course of the FBI s criminal investigation of the crash TWA Flight 800, the FBI received several claims of responsibility. These claims were thoroughly investigated and no evidence to substantiate these claims was found.

Question

14) How closely has the FBI worked with the Central Intelligence Agency and other members of the U.S. intelligence community to examine the possibility that TWA Flight 800 was destroyed as a result of a terrorist act perpetrated by a domestic or foreign terrorist organization?

Response

In addition to the technical and analytical assistance noted earlier, from the outset, the other members of the community, to include CIA, the Defense Intelligence Agency, and the National Security Agency have worked closely with the FBI searching for any evidence or indication that Flight 800 was destroyed by a terrorist group or organization. The cooperation between the FBI and other members of the U.S. intelligence community has been nothing but outstanding. The cooperation, professionalism and dedication of each and every individual and agency providing assistance in this investigation is something in which the people of the United States can take great pride.

Question

15) Is it true that in the days following the crash, the FBI seized radar tapes made by Sikorsky Helicopter of Bridgeport, Connecticut? If true, did the FBI have a warrant to seize the tapes? Have the tapes been analyzed? Do the tapes show any evidence of a missile launch? Will the FBI return the tapes to Sikorsky?

Response

Sikorsky Aircraft, Stratford, Connecticut, advised that Sikorsky, in support of flight operations and testing conducted the Sikorsky plant, operates radar sites at Suffolk County, Long Island, and at Pitney Bowes, in Connecticut. After the crash of Flight 800, Sikorsky's Chief Air Traffic Controller reviewed his Long Island tape (magnetic) and saw that TWA Flight 800 was recorded. Sikorsky then contacted the FBI. Sikorsky reproduced a VHS cassette from the screen and voluntarily provided the original magnetic tape and the VHS copy to the FBI. Sikorsky officials advised that Telephonics, a company on Long Island, had designed Sikorsky Aircraft's radar system software and could reproduce the data, providing flight profiles of all aircraft on the tape. Sikorsky was given a receipt (FD-597) for these items. Because these items were voluntarily provided to the FBI, no warrant was required. The original magnetic tape is being retained by the FBI as evidence, and will be returned to Sikorsky upon conclusion of the criminal investigation.

The Sikorsky tape has been reviewed and analyzed by NTSB, FAA, Telephonics and an outside radar consultant under contract to the government. The tapes show no evidence of a missile launch or of a missile or any other object striking Flight 800.

Question

16) What steps were taken to preserve evidence from the crash? Was the wreckage immediately checked for explosive residue as it was brought up from the ocean?

Response

Evidence in this investigation was received from four primary sources:

- a. Wreckage and debris retrieved from the ocean floor by divers;

- b. Wreckage and debris collected from the ocean floor by trawling operations;
- c. Floating debris brought in by search and rescue vessels, both government and private, particularly in the first few days immediately following the crash; and
- d. Debris that washed ashore, was discovered by the police or private citizens and subsequently transported to the evidence facility at Calverton.

To initiate a proper chain of custody and maintain the integrity of the evidence, FBI personnel were placed on board all U.S. Navy ships, police dive platforms and commercial trawling vessels. Once retrieved, all evidence was visually inspected and documented, using global positioning satellites (GPS), as to its recovery location. Consistent with availability, in many instances, wreckage and debris were immediately examined aboard the Navy ships by FBI certified Bomb Technicians and, in some cases, by Laboratory personnel. Evidence retrieved by divers or the trawling operation was transported to the Calverton facility by FBI Agents, ensuring a proper chain of custody.

Upon arrival at Calverton, all evidence was inspected following specific protocols. As a first step, the evidence that was not fuel contaminated was aligned in vertical rows on the hangar floor by and catalogued by FBI Evidence Response Team personnel. Immediately thereafter, the evidence was visually inspected by FBI or Police Bomb Technicians as well as FBI Laboratory personnel when they were on-site. Fuel contaminated debris was placed in a separate hangar to dry out before initiating the same protocols. Evidence deemed to be worthy of additional forensic examination was set aside in a designated holding room for closer evaluation by FBI Laboratory personnel and/or packaged for submission to the FBI Laboratory. A mobile x-ray unit was used on dense or opaque pieces of wreckage such as seat cushions. Literally hundreds of chemical swabbings of the debris were taken during the collection process to test for explosive residue. While most of these swabbings took place at the Calverton facility, in some instances, swabbings were taken prior to transporting the wreckage to Calverton.

All evidence received in the investigation was first submitted to criminal forensic examination by FBI and police personnel prior to release to the National Transportation Safety Board (NTSB) for engineering and mechanical assessment and ultimate placement in the hangar.

Question

17) I have seen media reports that, in many instances, wreckage was washed extensively with a forceful stream of water. Is this true?

Response

In the initial two to three weeks of the wreckage recovery operation, the debris was rinsed with a fine spray of clear water when it arrived at the pier at the Shinnecock Coast Guard Station. The rinsing was stopped because state and local environmental officials believed the rinsing operation was causing an environmental hazard from the Jet-A fuel being washed onto the dock.

Question

18) If in fact the wreckage was rinsed with a forceful stream of water to remove the saltwater, wouldn't this have also dislodged a good portion of evidence such as residue from an explosive device?

Response

The decision was made to rinse the debris on the pier because examination of the debris initially recovered showed an intense amount of salt water decay on the metal pieces. The operation of the salt on the metal causes pitting and there was concern that such pitting caused by the salt could obscure or be confused with the pitting normally caused by high explosives. The decision to wash the debris was made by FBI Laboratory personnel. They believed that any residue which may have been on the metal pieces would have been washed off the metal before it was recovered and that any residue on pieces which were porous would not be disturbed by the washing, as was demonstrated by the two hits for explosive residue found on the carpet and the fiberglass curtain.

Question

19) You stated in your response to one of my questions that the FBI has determined that TWA Flight 800 was in fact the same aircraft that was used in a dog training exercise in St. Louis two weeks before the crash. Does the FBI have verifiable and concrete evidence that TWA Flight 800 was definitely tested in St. Louis? Is the FBI willing to share this evidence with the committee?

Response

On September 20, 1996, a patrolman for the St. Louis Airport Police Department (SLAPD), who is assigned to the canine unit was interviewed by FBI Agents in St. Louis. The patrolman advised that his responsibilities included maintaining the training for his explosives sniffing dog on a daily basis so that he could meet FAA requirements for training and certification. According to the patrolman, it is normal procedure to conduct training for the dogs on virtually a daily basis on available aircraft. On the morning of June 10, 1996, while working the day shift at the St. Louis International Airport, the patrolman placed a call to the manager on duty at TWA Line Service to determine if they had an aircraft available on which the patrolman could conduct some training for his bomb sniffing dog. The manager on duty, whose name the patrolman could not recall, told him that a "wide body" was available at, gate 50 at the St. Louis Airport and that the patrolman could use this aircraft to conduct his training. The patrolman recalled that he was particularly enthused because it is rare that "wide body" aircraft become available for such training at St. Louis.

The patrolman retrieved four types of explosives from the ALAPD explosives bunker for use in the training. The explosives retrieved were water gel, C-4, det cord and ammonia dynamite. He also used smokeless powder, which was stored in the trunk of his patrol car, in the training. The officer noted that the explosives bunker contains a variety of military and commercial type explosives for use in training and opined that the bunker would very likely contain residue of these explosives. After retrieving the explosives, the patrolman proceeded in his patrol car to Gate 50 where he found a 747 parked. The patrolman made no notations regarding the tail number of the aircraft, as it was not his policy to do so.

The patrolman parked his vehicle at the base of the stairway at the outside of the jetway and entered the aircraft. The patrolman determined that the electric power was on and that no one else was present on the plane. He returned to his patrol car and to bring the explosives on board the aircraft, which he believes he accomplished in two trips. The explosives were initially placed on the counter in the galley just inside the main entry door to the aircraft. The patrolman then proceeded to place the explosives around the aircraft interior for the training/certification exercise.

The patrolman proceeded to place the explosives about the aircraft as follows:

1. The smokeless powder was on its side with the cap unscrewed inside the center armrest of row 2, seat 2 of the first class section.

2. The water gel was placed on the floor inside a tall, narrow closet/storage bin at the rear of the upper level first class section.

3. A 1.4 pound block of C-4, covered with a thin covering of clear cellophane type material, which the patrolman described as being in poor condition and allowing some of the explosive to be exposed, was placed in the pouch on the back of the backrest of row 10, seat 9.

4. The det cord, which was described by the patrolman as a thirty foot piece in extremely poor condition with cracks every few inches, was brought in its container to row 20 of the main cabin. The patrolman said that he believes he went to the side of the cabin opposite from the side where he placed the C-4 since it was his practice to place the explosives in a zig-zag pattern within the aircraft. The patrolman placed the container in which the cord was stored on the floor in the aisle, removed the cord and placed it in an overhead compartment in row 20. The patrolman noted that the can containing the det cord contained quite a bit of powder from the det cord and said if one were to wave it in the air it would create a visible cloud of powder.

5. One stick of ammonia dynamite was partially concealed in a groove in the flooring near an emergency door labeled "PRE" on the same side of the aircraft as he placed the C-4. The patrol man believes the door was located over the wing.

The patrolman advised that he began the placement of the explosives at 10:45 AM and is required by FAA regulation to wait 30 minutes from the first placement before commencing the training exercise with the dog. At 11:45 AM, the patrolman began the exercise by bringing the dog into the aircraft and working him through the three areas of the aircraft where the explosives were placed. The exercise lasted fifteen minutes and the dog located all the explosives.

After returning the dog to his patrol car, the patrolman proceeded to remove the explosives from the aircraft in the same order in which he placed them, using the galley as the center of his movements. The patrolman stated that he did not enter any areas of the aircraft other than those described and specifically stated that he did not enter any cargo areas. He also stated that he was the only person involved in the exercise. The patrolman provided the FBI with the can of smokeless powder used in the exercise and advised that all the other explosives had been replaced by either the FAA or exchanged locally for fresh material since the time the exercise was conducted.

The FAA in St. Louis provided the FBI with a copy of a TWA document listing gate assignments for June 10, 1996. This document, a copy of which is attached, shows that a 747 bearing tail number 17119, which is the tail number for the 747 that was Flight 800, was parked at gate 50 from shortly before 700 hours (7 A.M.) until approximately 1230 hours (12:30 P.M.) on that date.

[illegible]

Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

September 15, 1997

Mr. James E. Hall
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, S.W.,
Washington, D.C. 20594

Dear Chairman Hall:

Thank you for your response to the seven follow-up questions I sent you on July 25, 1997 regarding the National Transportation Safety Board's investigation of the crash of TWA Flight 800 (see enclosed). Upon viewing your responses, I do have additional questions. They are listed below.

- 1) Was the test conducted in August of 1996 by the Boeing Commercial Airplane Group (BCAG) conducted at the request of the NTSB?
- 2) On December 13, 1996 you submitted a number of safety recommendations to the Federal Aviation Administration. The December 13, 1996 letter made several references to the BCAG test, and I assume that the safety recommendations you made were based, in part, on the results of that test. You indicated in your response to me that "*[T]he Safety Board staff believed the test was not accomplished with sufficient detail to provide the specific data needed to understand the complex thermodynamic processes inside the tank.*" That being the case, does the NTSB still stand by the safety recommendations made to the FAA on December 13, 1996?
- 3) While I appreciate the fact that you informed me how the NTSB conducted a series of flight tests this past July, you ignored my question on what the results of these tests were. What, in fact, were the results of these tests? Did these tests provide any evidence that Jet A-1 fuel (the type of fuel used by TWA Flight 800) could ignite under the type of environmental conditions experienced by TWA Flight 800 on July 17, 1996?
- 4) In your response you referenced U.S. Air Force accidents involving KC-135 aircraft. Isn't it true that in those accidents the KC-135s were using JP-4 fuel, which, as you know, is much more volatile than Jet A-1 fuel? Isn't it also true that those accidents (which occurred in the 1980s) factored heavily into the U.S. Air Force's decision to switch to JP-8 fuel (the military equivalent of Jet A-1 fuel)?

(next page)

- 5) Has the NTSB been able to find any examples of a fuel tank explosion in an airborne commercial jet or military aircraft caused by an internal ignition source in which the aircraft was using either JP-8 or Jet A-1 fuel?
- 6) Does the NTSB have at its disposal conclusive evidence regarding the 1990 explosion of the center fuel tank of a Philippines Boeing 737 to state that this accident was definitely caused by an internal ignition source related to a mechanical malfunction? Does the NTSB know what type of jet fuel the Philippines Boeing 737 was using at the time of the accident?
- 7) Isn't it true that there has never been an airborne explosion of the fuel tanks of a 747 using Jet A-1 or JP-8 fuel?
- 8) You characterized as "*remote*" the possibility that a missile warhead detonated some distance from the airplane and a fragment of the warhead penetrated the center fuel tank. Is the NTSB aware of the fact that most anti-aircraft missiles in use today (including those in the arsenals of countries such as Iran and Iraq) are specifically designed to detonate 50 to 100 feet from the target?
- 9) Is the NTSB aware of the fact that an anti-aircraft missile explosion occurring 50 to 100 feet from a 747 would cause the type of violent turbulence necessary to cause "misting" in the center fuel tank?
- 10) Has the NTSB consulted with military experts familiar with anti-aircraft missiles and the type of damage such missiles could cause to a commercial airliner? If yes, have any of these experts been allowed to examine the wreckage of TWA Flight 800?
- 11) Has the NTSB examined the thousands of feet of high speed film the Department of Defense has depicting the effects of an anti-aircraft missile deployed against a drone?
- 12) You indicated, as part of your response to my sixth question, that "*...it is unlikely that any eye witness- could see an object as small as a missile or even the smoke tail from an anti-aircraft missile.*" What tests has the NTSB conducted or reviewed that would substantiate this claim?
- 13) Has the NTSB consulted with military experts on anti-aircraft missiles and anti-aircraft missile tests to ascertain whether or not anti-aircraft missiles would be visible to the naked eye from 10 miles away?

(next page)

Mr. James E. Hall
September 15, 1997
Page Three

14) Has the NTSB or the Federal Bureau of Investigation conducted, or had commissioned, any tests involving rod missile warheads?

Thank you for your continued cooperation. I, once again, look forward to your prompt and detailed response.

Respectfully,

A handwritten signature in black ink, appearing to be 'JAT', written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/pm
Enclosure

c: The Honorable John J. Duncan, Jr.
The Honorable William Lipinski

COMMITTEE:
TRANSPORTATION AND
INFRASTRUCTURE
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RANKING DEMOCRAT: PUBLIC BUILDINGS
AND ECONOMIC DEVELOPMENT
AVIATION
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SUBCOMMITTEE:
SPACE

Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

October 1, 1997

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109 WEST 3rd STREET
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(216) 385-5921

Mr. James K. Kallstrom
Assistant Director in Charge
New York Office
Federal Bureau of Investigation
26 Plaza, 23rd Floor
New York, New York 10278-0004

Dear Mr. Kallstrom:

Thank you for your thorough and professional response to the questions I submitted to you in July regarding the crash of TWA Flight 800. I have several additional questions, and would appreciate it if you could respond.

- 1) In a recent newspaper article a spokeswoman for the Central Intelligence Agency publicly stated that TWA Flight 800 was definitely not brought down by a missile. Through your previous correspondence, I was aware that the CIA was working with the Federal Bureau of Investigation on the missile theory. I would like to know why the CIA felt it was necessary to issue such a categorical statement prior to the FBI reaching any final conclusions about the cause of the crash?
- 2) Was the FBI aware of the fact that the CIA was going to go public with a statement?
- 3) It is my understanding that the FBI has conducted tests involving missile warheads and airplane fuselages. Has the FBI conducted any tests involving continuous rod warheads?
- 4) Has the FBI consulted with any active or retired U.S. military personnel with expertise on missile warheads? If yes, do any of these experts have experience with continuous rod warhead missiles?
- 5) If the answer to the above question is yes, have any of these experts been allowed to examine the wreckage of TWA Flight 800?
- 6) You indicated in your September 5, 1997 response that the FBI had an outside expert metallurgist examine the almost 200 holes, slits, punctures or penetrations identified in reconstructed areas of the aircraft, and that this task should be completed by September 30, 1997. Has this task been completed? If yes, what were the results?
- 7) During the recovery process, was all the recovered wreckage taken to the Calverton, New York facility?

(next page)

Mr. James K. Kallstrom

October 1, 1997

Page Two

- 8) If some wreckage was transported to sites other than Calverton, where were these sites? Was this wreckage eventually transported to Calverton?
- 9) How much wreckage has been transferred to other locations for analysis?
- 10) There have been news reports of orange-colored wreckage being recovered; wreckage not linked to TWA Flight 800. Was orange-colored wreckage in fact recovered?
- 11) If the answer to the above question is yes, has the FBI or the National Transportation Safety Board been able to identify the source of the orange-colored wreckage?
- 12) Besides federal investigators, has the FBI or the NTSB asked any private citizens or officials from companies other than Boeing or TWA to inspect the wreckage of TWA Flight 800, as well as any unidentified wreckage that might have been recovered?
- 13) If the FBI determines, based upon an exhaustive review of the available evidence, that the crash of TWA Flight 800 was not the result of a criminal act, will the FBI share with the committee all the information and evidence it collected to reach such a conclusion?
- 14) In conversations my staff has had with the NTSB, it has been postulated by the NTSB that most of the eyewitnesses were drawn to the explosion by a noise, and that, given the distances involved, they could not have possibly viewed the actual initial explosion of TWA Flight 800. Has the FBI examined the characteristics of some anti-aircraft missiles to determine whether or not a missile traveling Mach One or faster will cause a sonic boom audible from a distance of up to ten miles?

Thank you for your continued cooperation. I look forward to your expeditious response.

Respectfully,

A handwritten signature in black ink, appearing to read 'J. Traficant', written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/pm
Enclosure

c: The Honorable John J. Duncan, Jr.
The Honorable William Lipinski



National Transportation Safety Board

Washington, DC 20594

Office of the Chairman

November 4, 1997

Honorable James A. Traficant, Jr.
House of Representatives
Washington, D. C. 20515

Dear Congressman Traficant:

This is in response to your further correspondence of September 15, 1997, about my appearance before the Aviation Subcommittee, House Committee on Transportation and Infrastructure on July 10, 1997, regarding the TWA flight 800 investigation. In your letter, you provided additional questions regarding the investigation. The Safety Board's responses to your questions follow.

1. Was the test conducted in August of 1996 by the Boeing Commercial Airplane Group (BCAG) conducted at the request of the NTSB?

Response: No. The fuel tank temperature tests conducted in August of 1996 by the BCAG were not requested by the Safety Board. The Safety Board had discussed developing a test plan and conducting detailed measures of the temperatures inside a 747 fuel tank at various flight conditions with the parties to the investigation. At the time of the BCAG test the Safety Board was still in the process of developing a draft test plan and test protocol procedures. The test conducted by BCAG was an attempt to quickly determine the temperatures in the center fuel tank, and only one temperature probe was used in the test. At the completion of the test, Boeing provided the test data to the Safety Board, and the one probe indicated that the temperatures of the vapor approached the lower flammability level.

2. On December 13, 1996 you submitted a number of safety recommendations to the Federal Aviation Administration. The December 13, 1996, letter made several references to the BCAG test, and I assume that the safety recommendations you made were based, in part, on the results of that test. You indicated in your response to me that *"[T]he Safety Board staff believed the test was not accomplished with sufficient detail to provide the specific data needed to understand the complex thermodynamic processes inside the tank."* That being the case, does the NTSB still stand by the safety recommendations made to the FAA on December 13, 1996?

Response: Yes. In the recent tests conducted by the Safety Board, the temperatures in the center fuel tank were higher than previously believed, and they were well within the lower and upper flammability limits for Jet A fuel under conditions simulating the TWA 800 flight. The test results reinforce the Safety Board's recommendations that operational and technical modifications are needed to reduce or eliminate the potential for the creation of explosive fuel/air vapors in fuel tanks. The Board's safety recommendations were not based solely, or even primarily, on the results of the BCAG test. The safety recommendations were based on the results of

the Board's accident investigation, which indicated very clearly that the airplane broke apart as a result of a fuel/air explosion in the center wing fuel tank. The data collected in the BCAG test were not inconsistent with the investigative findings. It is the responsibility of the Safety Board to make recommendations as safety concerns arise.

3. While I appreciate the fact that you informed me how the NTSB conducted a series of flight tests this past July, you ignored my question on what the results of these tests were. What, in fact, were the results of these tests? Did these tests provide any evidence that Jet A-1 fuel (the type of fuel used by TWA Flight 800) could ignite under the type of environmental conditions experienced by TWA Flight 800 on July 17, 1996?

Response: The Safety Board collected a vast amount of data from flight tests it conducted in July 1997 and those data will be included in the public docket. The Board found in those tests that the temperatures and conditions in a Boeing 747 center fuel tank during normal operations can be within the flammability limits for Jet A fuel. In a flight test that simulated the flight profile and the pre-flight conditions of TWA flight 800, (the airplane was flown at altitude for several hours to reduce the temperature of the center fuel tank; after landing two of the air conditioning packs were operated for two hours; the airplane then departed at approximately the same time as the TWA 800 flight) it was found that the temperature inside the tank was well within the flammability limits and it would have been possible to ignite the fuel (Jet A) with relatively little energy.

4. In your response you referenced U.S. Air Force accidents involving KC-135 aircraft. Isn't it true that in those accidents the KC-135s were using JP-4 fuel, which, as you know, is much more volatile than Jet A-1 fuel? Isn't it also true that those accidents (which occurred in the 1980s) factored heavily into the U.S. Air Force's decision to switch to JP-8 fuel (the military equivalent of Jet A-1 fuel)?

Response: The Safety Board is aware of several accidents involving fuel tank explosions on military airplanes that were using JP-4 fuel. The Safety Board is also aware that one of the reasons the military switched to using Jet A fuel was to reduce the potential for a fuel tank explosion. However, the accidents involving the military airplanes clearly indicate that it is very difficult to prevent ignition sources in airplane fuel tanks. Switching to Jet A has reduced, but not eliminated, the potential for an explosion. The Safety Board is concerned that ignition sources that caused explosions in the military airplanes could be present on commercial airplanes. If Jet A fuel/air vapor is in the explosive range at the same time that an ignition source is present, a fuel explosion or fire will occur.

5. Has the NTSB been able to find any examples of a fuel tank explosion in an airborne commercial jet or military aircraft caused by an internal ignition source in which the aircraft was using either JP-8 or Jet A-1 fuel?

Response: The Safety Board is not aware of a previous in-flight fuel tank explosion involving Jet A fuel caused by an internal ignition source.

6. Does the NTSB have at its disposal conclusive evidence regarding the 1990 explosion of the center fuel tank of a Philippines Boeing 737 to state that this accident was definitely caused by an internal ignition source related to a mechanical malfunction?

Does the NTSB know what type of jet fuel the Philippines Boeing 737 was using at the time of the accident?

Response: The Philippine Airlines Boeing 737 that exploded on the ramp in May 1990, had been using Jet A fuel prior to the explosion. The Safety Board participated in the Philippine investigation, and it was determined that the tank had been last filled with Jet A fuel and there were no records that it had been serviced in the six months prior to the accident with any fuel other than Jet A. The examination of the airplane found a manufacturing flaw in a center fuel tank float switch and the insulation on wiring to the switch was damaged. The two failures would have allowed much higher than designed voltage to be applied to the switch that could have resulted in a spark. The examination of the fuel tank and the surrounding structure found no evidence of an external event that would have ignited the fuel/air vapor in the tank. I have enclosed a copy of this report

7. Isn't it true that there has never been an airborne explosion of the fuel tanks of a 747 using Jet A-01 or JP-8 fuel?

Response: The only previous airborne fuel tank explosion involving a Boeing 747 was the Iranian Air Force 747 that crashed near Madrid, Spain in June 1971. The airplane had been fueled with JP-4.

8. You characterized as "»mote" the possibility that a missile warhead detonated some distance from the airplane and a fragment of the warhead penetrated the center fuel tank. Is the NTSB aware of the fact that most anti-aircraft missiles in use today (including those in the arsenals of countries such as Iran and Iraq) are specifically designed to detonate 50 to 100 feet from the target?

Response: Yes, we are aware of these anti-aircraft missiles, and the investigation has considered the possibility that a fragment of such a missile may have penetrated the center fuel tank, igniting the fuel/air mixture. The Board has consulted with military experts such as those from China Lake and they have examined the wreckage on several occasions. Examination of the wreckage of TWA flight 800 has not found a pattern of penetrations that is characteristic of the explosion of a warhead 50 to 100 feet from an airplane. In addition, examination of the wreckage indicates that if a warhead detonated near the airplane, the explosion of the missile by itself was insufficient to have brought down the airplane. It is important to point out that had the center tank not contained an explosive fuel/air mixture there would have been no explosion even if a missile fragment had penetrated the center fuel tank and the airplane could have successfully returned to the airport.

9. Is the NTSB aware of the fact that an anti-aircraft missile explosion occurring 50 to 100 feet from a 747 would cause the type of violent turbulence necessary to cause "misting" in the center fuel tank?

Response: The Safety Board's examination of the properties of Jet A has considered the effects of "misting" fuel, as could be caused by vibration of the aircraft. Research indicates that fuel mist can be explosive, however a fuel mist may require greater energy to ignite than a fuel/air vapor under the same temperature conditions. Based on the temperatures obtained during the Safety Board flight tests, the TWA 800-center wing tank would have been flammable with or without misting. Though it is conceivable that a nearby exploding warhead could create a pressure wave that would create turbulence resulting in a fuel mist in the center wing tank, the mist would not

by itself cause an explosion in the center wing tank. For an exploding warhead (50 to 100 feet from the airplane) to cause the explosion, a fragment of the warhead would have to penetrate the tank and ignite explosive vapors or mist. However, the warhead fragments travel at speeds much greater (two to five times the speed of sound depending upon the size and shape of the fragment) than the pressure wave (speed of sound), and would pass through the airplane before the mist would form (if it did at all). Thus, a mist created by a missile exploding near the airplane would not likely have played any role in the explosion of the center wing tank on TWA 800.

10. Has the NTSB consulted with military experts familiar with anti-aircraft missiles and the type of damage such missiles could cause to a commercial airliner? If yes, have any of these experts been allowed to examine the wreckage of TWA Flight 800?

Response: Early in the investigation the FBI and the Safety Board contacted the military for assistance in examining the wreckage for evidence of a missile impact or the detonation of a warhead near fuselage. Members of the Navy's aircraft survivability assessment team from China Lake, California, have examined the wreckage and assisted in the investigation. The Navy team members have provided extensive briefings to the Safety Board's investigators on the performance characteristics of anti-aircraft missiles and the resulting damage to airplanes. The Navy's experts have not reported that they found any damage to TWA flight 800 that was peculiar to a missile. The FBI has also examined the wreckage for indications of missile damage and has also indicated it has not yet found any such evidence.

11. Has the NTSB examined the thousands of feet of high speed film the Department of Defense has depicting the effects of an anti-aircraft missile deployed against a drone?

Response: Safety Board investigators have examined the wreckage of several airplanes used in the Navy's aircraft survivability assessment program. The Safety Board staff have observed military film documentation of live tests of anti-aircraft missiles. However, because I do not know to what specific film your questions applies, I cannot determine if the Safety Board have reviewed them. We'd be happy to review any additional film.

12. You indicated, as part of your response to my sixth question, that *"...it is unlikely that any eye witness could see an object as small as a missile or even the smoke tail from an anti-aircraft missile."* What tests has the NTSB conducted or reviewed that would substantiate this claim?

Response: The Safety Board has not conducted any tests; however, as you are aware the Safety Board and the Federal Bureau of Investigation have interviewed numerous eye witnesses. The visibility on the evening of the accident varied, from no better than 10 miles to as little as four miles closer to the accident site. Most of the eye witnesses were 10 miles or more from the accident site and at such a distance, it would have been very difficult to see even a Boeing 747. Further, it would have been extremely unlikely that at such distances eye witnesses could have seen a much smaller target, such as a missile, even under the best of conditions. Even those witnesses who were closest to the scene (more than eight miles away) would not likely have been able to see a small object such as a missile. However, some witnesses could have, and apparently did see, evidence of light or a fireball. The FBI has been working on witness evidence and is finalizing its efforts on this now.

13. Has the NTSB consulted with military experts on anti-aircraft missiles and anti-aircraft missile tests to ascertain whether or not anti-aircraft missiles would be visible to the naked eye from 10 miles away?

Response: Yes, Navy experts have indicated to us that it is unlikely that a shoulder launched anti-aircraft missile would have been visible from 10 miles away given the visibility conditions that prevailed on the night of the accident and the position of the witnesses.

14. Has the NTSB or the Federal Bureau of Investigation conducted, or had commissioned, any tests involving continuous rod missile warheads?

Response: The Safety Board has not commissioned any tests regarding continuous rod missile warheads. We are unaware if the FBI, as part of their investigation of any criminal activity associated with the accident, has conducted such tests.

If you have further questions, or if we can be helpful to you at any time, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Hall", is written over a vertical line. The signature is stylized, with the first name "Jim" written in a cursive script and the last name "Hall" in a more formal, slightly cursive script.

Jim Hall
Chairman

encl.
Philippine Airlines B-737 Report



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: August 1, 1990

In reply refer to: A-90-100 thru -103

Honorable James B. Busey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On May 11, 1990, a Boeing 737-300, Ireland registration EI-BZG, leased to and operated by Philippine Air Lines, exploded and burned at Manila, Republic of the Philippines, shortly after pushback from the ramp. At the time of the accident, the airplane was operating on power from the auxiliary power unit. Of the 119 persons on board, eight persons were fatally injured and 30 received serious injuries. The airplane was destroyed by fire.

Although the Philippine Government is currently investigating the accident, the National Transportation Safety Board has been involved in the investigation through its U.S. accredited representative in accordance with the provisions of Annex 13 to the International Civil Aviation Organization (ICAO) treaty.

The investigation has found no evidence of a bomb, an incendiary device, or sabotage. Preliminary evidence indicates that ignition of the fuel-air mixture in the center fuel tank was the cause of the explosion and subsequent fire. The investigation has yet to reveal the exact ignition source. Examination of the cockpit voice recorder (CVR) data disclosed that a one-cycle transient spike occurred approximately .2 second before the explosion. The source and nature of the spike -- whether it was electrically induced on the CVR signal wire or electromagnetically picked up by the area microphone or pilot boom microphones -- has not been determined. The investigation has found potential defects involving the center tank float switch and the wiring for the float switch, both of which could have been the source of the ignition. Additionally, interference rub marks were found on the fuel booster pump impeller and pump body.

At the time of the accident, all the fuel boost pumps were in the "ON" position. The center Fuel tank had not been filled since March 9, 1990. During the pushback of the airplane the center fuel tank low pressure light illuminated, indicating that the center fuel tank had been emptied of all usable fuel. Laboratory examination of fuel samples from the airplane and fuel storage tanks indicates that the fuel vapor in the center tank would have had a flash point of between 112° and 117° F. At flash point, a heat source of between 400° to 500° F or an electrical arc of .25 milli-joule would have been sufficient to initiate an explosion of the fuel-air mixture. Ambient temperature at the time of the accident was 95 o F.

Laboratory examination of the float switch (Revere Aerospace part number F8300-146) for the center fuel tank refueling valve has found portions of the switch housing and its reed switch tube missing and metal fragments in the remains of the switch epoxy potting material. The examination of the components and discussions with the manufacturer indicate that it is possible that the switch did not pass inspection when originally assembled. Prior procedures at Revere were to drill out the epoxy potting material and reed switch from the housing then install a new reed switch. This procedure would explain the damage to the switch housing and the metal fragments that were found in the epoxy potting material. Revere modified its procedures approximately 3 years ago to prohibit this practice. All of the float switches that Boeing has in stock, approximately 850, were manufactured prior to this change in procedure. These float switches were subject to dielectric tests at the Boeing Company's facilities. All of the switches passed these tests. However, investigators and laboratory technicians are uncertain as to the efficacy of current acceptance tests and lot sampling procedures. Therefore, the development of additional testing techniques may be necessary. The same model float switch is used on all three fuel tanks in the Boeing 737 series airplanes, in the auxiliary fuel tanks of 100 Boeing 727s, and possibly on other manufacturer's airplanes.

Normally, the fuel tank float switches are only electrically powered when the refueling panel access door is open. The door would have been closed during the pushback of the airplane when the explosion occurred. However, examination of the 28-volt direct-current power wires for the float switch, which lead from the center tank to the refueling panel on the right wing, disclosed an area approximately 3/8 inch long in which the wire insulation had been compromised and the conductor was exposed. The exposed wires were crushed, but no evidence of electrical arcing was found. The exposed section of wire was inside the inboard vapor seal at the right engine pylon. Examination of the wire bundle in the vapor seal revealed several other wires that had damaged insulation and exposed conducting material, including a wire powered by 115-volt alternating current. Further examination of the wire bundles for both the left and right wings found numerous areas in which wire insulation had been damaged.

It is possible that the combination of a faulty float switch and damaged wires providing a continuous power supply to the float switch may have caused an electrical arc or overheating of the switch leading to the ignition of the center fuel tank vapor.

The investigation determined that after delivery of the airplane, Philippine Air Lines had installed logo lights on the wingtip trailing edges. This installation would have required mechanics to insert additional wires through the vapor seals, the fuselage pressure seal, and inside numerous clamps. Thus, the installation of the wires for the logo lights could have been the source of the damage to wires in the wire bundles. However, the damage may have resulted from the installation of the wire bundle at the

factory because other damaged wires were found that were not related to the installation of the wires for the logo lights. For example, intercom wires in the left fuselage wire bundle were found with damaged insulation and exposed conductor. Additionally, many airplanes are often modified after delivery, requiring the installation of additional wires in the wire bundles of the wings. Boeing has informed the Safety Board that there were minor changes to the wing wire bundles in the 737-300, -400, -500 series airplanes as compared to the 737-100 and -200 series. However, the wire bundle routing and the wire bundle vapor seals are considerably different.

The Safety Board believes that the finding of damaged float switch wiring and a potentially defective float switch, as well as the potential for a fuel tank explosion requires the immediate inspection or testing of float switch wiring of the three fuel tanks on Boeing 737-300, -400, and -500 series airplanes. The Safety Board believes that immediate inspection of the float switch wiring should be accomplished to verify that electrical power is not being supplied to float switches by damaged wiring. Inspection or testing of the float switches should be accomplished after Revere, Boeing, and the Federal Aviation Administration (FAA) are confident that satisfactory testing techniques have been developed.

The Safety Board notes that the FAA has sent a letter to Philippine Air Lines requesting that the other two airplanes modified by the airline be inspected for damaged wiring. The Safety Board does not believe that this action is adequate because it does not address the problem of faulty float switches. Additionally, the FAA action does not decrease the potential of another accident because many airplanes have the same float switch installed and the possibility of damaged wiring exists whether or not the airplane was modified after original manufacture.

The Safety Board believes that it would be prudent, at the next maintenance inspection, for all 14 CFR Part 121 airplanes that have had additional wires added to their wing wire bundles since delivery to be inspected for damage to the wires under the clamps and inside pressure seals and vapor seals.

Lastly, laboratory examination of the left booster pump for the center fuel tank on the accident airplane found evidence of an interference rub between the pump impeller and pump body, and a slight wearing of the bearings. The manufacturer has stated that such material wear is common when pumps have been run in a dry condition. The manufacturer also stated that some operators will let the booster pumps run with a tank empty for extended periods and that no problems have been noted. However the service life of the pump bearings is less than expected. Investigators have been unable to find adequate test data on the dry running of the booster pumps in jet fuel vapor at flash point temperatures to eliminate the rubbing of the pump impeller as a possible ignition source. The Safety Board believes that appropriate tests should be accomplished to determine if the pumps are airworthy for all operating conditions. Such tests would include continuously running the pumps in fuel vapor at flash point with the impeller rubbing the pump body.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

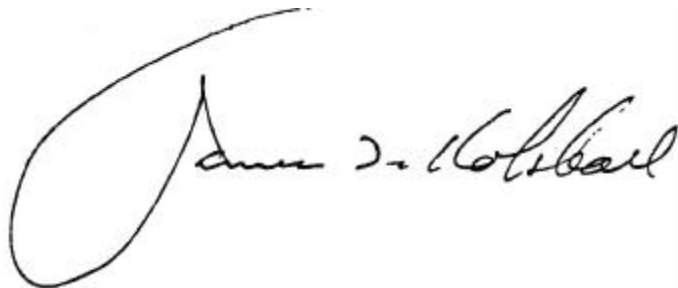
Issue an airworthiness directive to require immediate inspection or testing of float switch wiring from the float switches to the refueling panel for chaffed or damaged insulation material on Boeing 737-300, -400, and -500 series airplanes. The directive should state that special emphasis is placed on inspecting the wire bundle where it passes through the wing pylon vapor seals and under the wire bundle clamps. (Class I, Urgent Action) (A-90-100)

Develop testing techniques to ensure that float switches manufactured by Revere Aerospace are free from defect that could cause an explosion or fire. After testing techniques are developed, issue an' airworthiness directive to require testing of Revere Aerospace float switches and replacement if they are defective. (Class II, Priority Action) (A-90-101)

Issue an airworthiness directive applicable to all 14 CFR Part 121 airplanes to require, at the next scheduled major maintenance inspection, an inspection of the wires in wire bundles in the wings where additional wiring has been added since the airplane was manufactured. The inspection should be directed to the determination of insulation damage where the wire bundle is under clamps and inside vapor seals and pressure seals. (Class II, Priority Action) (A-90-102)

Conduct a detailed engineering design review and testing of the fuel pumps used in 'the Boeing 737-300 series airplanes (P/N 10-62049-3) to verify that overheating and interference between the rotating components of the pump and its case will not cause a fire hazard. Testing should be conducted in jet-fuel vapor at flash point. (Class II, Priority Action) (A-90-103)

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, and LAUBER, Member, concurred in these recommendations. BURNETT, Member, filed the statement below.

A handwritten signature in black ink, reading "James L. Kolstad", is written over a horizontal line. The signature is cursive and fluid.

By: James L. Kolstad
Chairman

BURNETT, Member, concurring in part and dissenting in part:

I would have preferred that the first and second recommendations contained in this letter have been worded as originally adopted by the Board as follows:

Issue an airworthiness directive to require immediate inspection or testing of float switch wiring from the float switches to the refueling panel for chaffed or damaged insulation material on all airplanes equipped with float switches manufactured by Revere Aerospace, P/N 8300-146. The directive should state that special emphasis is placed on inspecting the wires where it passes through the wing pylon vapor seals and under the wire bundle clamps. (Class I, Urgent Action)

Issue an airworthiness directive to require testing of Revere Aerospace float switches, P/N F8300-146, and replacement if they are defective. (Class I, Urgent Action)



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: August 1, 1990

In reply refer to: A-90-100 thru -103

Honorable James B. Busey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On May 11, 1990, a Boeing 737-300, Ireland registration EI-BZG, leased to and operated by Philippine Air Lines, exploded and burned at Manila, Republic of the Philippines, shortly after pushback from the ramp. At the time of the accident, the airplane was operating on power from the auxiliary power unit. Of the 119 persons on board, eight persons were fatally injured and 30 received serious injuries. The airplane was destroyed by fire.

Although the Philippine Government is currently investigating the accident, the National Transportation Safety Board has been involved in the investigation through its U.S. accredited representative in accordance with the provisions of Annex 13 to the International Civil Aviation Organization (ICAO) treaty.

The investigation has found no evidence of a bomb, an incendiary device, or sabotage. Preliminary evidence indicates that ignition of the fuel-air mixture in the center fuel tank was the cause of the explosion and subsequent fire. The investigation has yet to reveal the exact ignition source. Examination of the cockpit voice recorder (CVR) data disclosed that a one-cycle transient spike occurred approximately .2 second before the explosion. The source and nature of the spike -- whether it was electrically induced on the CVR signal wire or electromagnetically picked up by the area microphone or pilot boom microphones -- has not been determined. The investigation has found potential defects involving the center tank float switch and the wiring for the float switch, both of which could have been the source of the ignition. Additionally, interference rub marks were found on the fuel booster pump impeller and pump body.

At the time of the accident, all the fuel boost pumps were in the "ON" position. The center Fuel tank had not been filled since March 9, 1990. During the pushback of the airplane the center fuel tank low pressure light illuminated, indicating that the center fuel tank had been emptied of all usable fuel. Laboratory examination of fuel samples from the airplane and fuel storage tanks indicates that the fuel vapor in the center tank would have had a flash point of between 112° and 117° F. At flash point, a heat source of between 400° to 500° F or an electrical arc of .25 milli-joule would have been sufficient to initiate an explosion of the fuel-air mixture. Ambient temperature at the time of the accident was 95 o F.

Laboratory examination of the float switch (Revere Aerospace part number F8300-146) for the center fuel tank refueling valve has found portions of the switch housing and its reed switch tube missing and metal fragments in the remains of the switch epoxy potting material. The examination of the components and discussions with the manufacturer indicate that it is possible that the switch did not pass inspection when originally assembled. Prior procedures at Revere were to drill out the epoxy potting material and reed switch from the housing then install a new reed switch. This procedure would explain the damage to the switch housing and the metal fragments that were found in the epoxy potting material. Revere modified its procedures approximately 3 years ago to prohibit this practice. All of the float switches that Boeing has in stock, approximately 850, were manufactured prior to this change in procedure. These float switches were subject to dielectric tests at the Boeing Company's facilities. All of the switches passed these tests. However, investigators and laboratory technicians are uncertain as to the efficacy of current acceptance tests and lot sampling procedures. Therefore, the development of additional testing techniques may be necessary. The same model float switch is used on all three fuel tanks in the Boeing 737 series airplanes, in the auxiliary fuel tanks of 100 Boeing 727s, and possibly on other manufacturer's airplanes.

Normally, the fuel tank float switches are only electrically powered when the refueling panel access door is open. The door would have been closed during the pushback of the airplane when the explosion occurred. However, examination of the 28-volt direct-current power wires for the float switch, which lead from the center tank to the refueling panel on the right wing, disclosed an area approximately 3/8 inch long in which the wire insulation had been compromised and the conductor was exposed. The exposed wires were crushed, but no evidence of electrical arcing was found. The exposed section of wire was inside the inboard vapor seal at the right engine pylon. Examination of the wire bundle in the vapor seal revealed several other wires that had damaged insulation and exposed conducting material, including a wire powered by 115-volt alternating current. Further examination of the wire bundles for both the left and right wings found numerous areas in which wire insulation had been damaged.

It is possible that the combination of a faulty float switch and damaged wires providing a continuous power supply to the float switch may have caused an electrical arc or overheating of the switch leading to the ignition of the center fuel tank vapor.

The investigation determined that after delivery of the airplane, Philippine Air Lines had installed logo lights on the wingtip trailing edges. This installation would have required mechanics to insert additional wires through the vapor seals, the fuselage pressure seal, and inside numerous clamps. Thus, the installation of the wires for the logo lights could have been the source of the damage to wires in the wire bundles. However, the damage may have resulted from the installation of the wire bundle at the

factory because other damaged wires were found that were not related to the installation of the wires for the logo lights. For example, intercom wires in the left fuselage wire bundle were found with damaged insulation and exposed conductor. Additionally, many airplanes are often modified after delivery, requiring the installation of additional wires in the wire bundles of the wings. Boeing has informed the Safety Board that there were minor changes to the wing wire bundles in the 737-300, -400, -500 series airplanes as compared to the 737-100 and -200 series. However, the wire bundle routing and the wire bundle vapor seals are considerably different.

The Safety Board believes that the finding of damaged float switch wiring and a potentially defective float switch, as well as the potential for a fuel tank explosion requires the immediate inspection or testing of float switch wiring of the three fuel tanks on Boeing 737-300, -400, and -500 series airplanes. The Safety Board believes that immediate inspection of the float switch wiring should be accomplished to verify that electrical power is not being supplied to float switches by damaged wiring. Inspection or testing of the float switches should be accomplished after Revere, Boeing, and the Federal Aviation Administration (FAA) are confident that satisfactory testing techniques have been developed.

The Safety Board notes that the FAA has sent a letter to Philippine Air Lines requesting that the other two airplanes modified by the airline be inspected for damaged wiring. The Safety Board does not believe that this action is adequate because it does not address the problem of faulty float switches. Additionally, the FAA action does not decrease the potential of another accident because many airplanes have the same float switch installed and the possibility of damaged wiring exists whether or not the airplane was modified after original manufacture.

The Safety Board believes that it would be prudent, at the next maintenance inspection, for all 14 CFR Part 121 airplanes that have had additional wires added to their wing wire bundles since delivery to be inspected for damage to the wires under the clamps and inside pressure seals and vapor seals.

Lastly, laboratory examination of the left booster pump for the center fuel tank on the accident airplane found evidence of an interference rub between the pump impeller and pump body, and a slight wearing of the bearings. The manufacturer has stated that such material wear is common when pumps have been run in a dry condition. The manufacturer also stated that some operators will let the booster pumps run with a tank empty for extended periods and that no problems have been noted. However the service life of the pump bearings is less than expected. Investigators have been unable to find adequate test data on the dry running of the booster pumps in jet fuel vapor at flash point temperatures to eliminate the rubbing of the pump impeller as a possible ignition source. The Safety Board believes that appropriate tests should be accomplished to determine if the pumps are airworthy for all operating conditions. Such tests would include continuously running the pumps in fuel vapor at flash point with the impeller rubbing the pump body.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

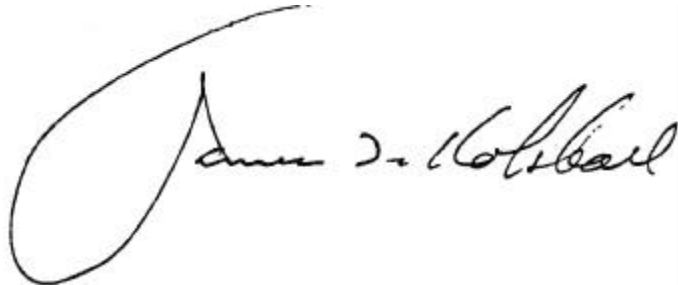
Issue an airworthiness directive to require immediate inspection or testing of float switch wiring from the float switches to the refueling panel for chaffed or damaged insulation material on Boeing 737-300, -400, and -500 series airplanes. The directive should state that special emphasis is placed on inspecting the wire bundle where it passes through the wing pylon vapor seals and under the wire bundle clamps. (Class I, Urgent Action) (A-90-100)

Develop testing techniques to ensure that float switches manufactured by Revere Aerospace are free from defect that could cause an explosion or fire. After testing techniques are developed, issue an' airworthiness directive to require testing of Revere Aerospace float switches and replacement if they are defective. (Class II, Priority Action) (A-90-101)

Issue an airworthiness directive applicable to all 14 CFR Part 121 airplanes to require, at the next scheduled major maintenance inspection, an inspection of the wires in wire bundles in the wings where additional wiring has been added since the airplane was manufactured. The inspection should be directed to the determination of insulation damage where the wire bundle is under clamps and inside vapor seals and pressure seals. (Class II, Priority Action) (A-90-102)

Conduct a detailed engineering design review and testing of the fuel pumps used in 'the Boeing 737-300 series airplanes (P/N 10-62049-3) to verify that overheating and interference between the rotating components of the pump and its case will not cause a fire hazard. Testing should be conducted in jet-fuel vapor at flash point. (Class II, Priority Action) (A-90-103)

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, and LAUBER, Member, concurred in these recommendations. BURNETT, Member, filed the statement below.

A handwritten signature in black ink, reading "James L. Kolstad", is written over a horizontal line. The signature is fluid and cursive, with a large loop at the beginning.

By: James L. Kolstad
Chairman

BURNETT, Member, concurring in part and dissenting in part:

I would have preferred that the first and second recommendations contained in this letter have been worded as originally adopted by the Board as follows:

Issue an airworthiness directive to require immediate inspection or testing of float switch wiring from the float switches to the refueling panel for chaffed or damaged insulation material on all airplanes equipped with float switches manufactured by Revere Aerospace, P/N 8300-146. The directive should state that special emphasis is placed on inspecting the wires where it passes through the wing pylon vapor seals and under the wire bundle clamps. (Class I, Urgent Action)

Issue an airworthiness directive to require testing of Revere Aerospace float switches, P/N F8300-146, and replacement if they are defective. (Class I, Urgent Action)



•REPUBLIC OF THE PHILIPINES
DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS
AIR TRANSPORTATION OFFICE
PASAY CITY, METRO MANILA 1300

December 26, 1990

Honorable James L. Kolstad
Chairman
National Transportation Safety Board
Washington D.C., 20594

Sir:

At 15008H, 11 May 1990, s Boeing 737-300 aircraft with Registration No. EI-BZG exploded and burned at the Domestic Terminal of the Ninoy Aquino International Airport (formerly Manila International Airport). The accident occurred when passenger embarkation was already accomplished and the aircraft was berg pushed back from the terminal in preparation for take-off. There were eight fatalities and 30 suffered physical injuries out of the 114 passengers on board.

In the investigation of this accident, we were fortunate to have received assistance from several agencies, including the National Transportation Safety Board. May I, therefore, take this opportunity to extend to you my deepest appreciation for the assistance your Office has given to the Philippine Government.

For your information, we are forwarding to you a copy of the Preliminary Report of the Philippine Aircraft Accident Investigation Board, together with the actions that this Office has required of Philippine Airlines.

Pending the final report of this accident, it is our hope that United States authorities may consider issuing pertinent precautionary measures and the suspected components.

Thank you and best regards.

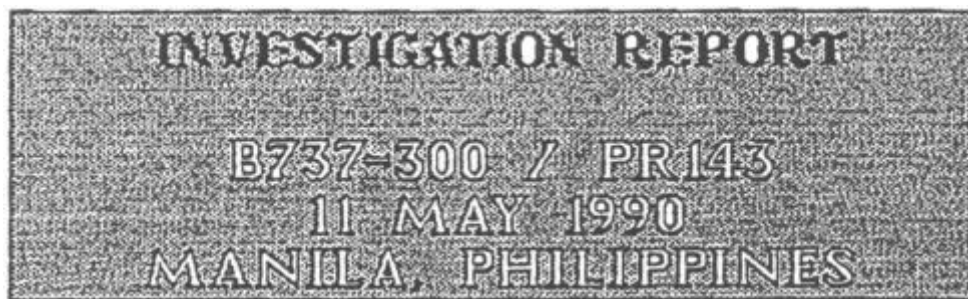
Very truly yours,

A handwritten signature in black ink, appearing to read "Oscar M. Alejandro", is written over a horizontal line.

OSCAR M. ALEJANDRO
Officer-In-Charge



•REPUBLIC OF THE PHILIPINES
DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS
AIR TRANSPORTATION OFFICE
PASAY CITY, METRO MANILA 1300



**Republic of the Philippines
Department of Transportation and Communications
AIR TRANSPORTATION OFFICE
Pasay City, Metro Manila**

**PRELIMINARY FINDINGS IN THE INVESTIGATION OF
PAL B737-300 EXPLOSION/FIRE AT MANILA/11 MAY
1990**

Abstract

While being pushed back from the gate at the Manila Domestic Terminal, a Philippine Airlines Boeing 737-300, EI-BZG, exploded and burned. Of the 114 passengers and six crew members, eight were fatally injured and 30 sustained injuries. At the time of the explosion, the engines were not yet running and the aircraft electrical power and air conditioning were supplied by the operating Auxiliary Power Unit (APU).

The investigation was focused on the center fuel tank, which was determined to be the source of the explosion, and the possibility of an explosive or incendiary device, an external source of ignition or a mechanical and/or electrical failure as a source of ignition.

The source of ignition has not been determined at this time. However, as a precautionary measure to ensure that the rest of the Boeing 737-300 in the Philippines were free from defects found in this aircraft (EI-BZG), recommendations to inspect the suspected components were issued and had been complied with.

Explosive or Incendiary Devices

Considering the conditions present during the accident, initial concentration of the investigation was on the possibility of an explosive or incendiary device as a source of the ignition. Bomb and fire propagation experts from various governmental departments of the Philippines, the United States and the United Kingdom as well as from Boeing Corporation assisted the Aircraft Accident Investigation Board of the Philippine Air Transportation Office in the detection and assessment of an explosive or incendiary device as the source of ignition.

No trace of an explosive or incendiary device was found. All available X-rays of fatalities and injured passengers were examined for foreign fragment penetration with negative results. Seat cushions were also x-rayed and examined with the same results.

Further, the findings of the National Transportation Safety Board of the United States in their spectrographic analysis of the fuel/air explosion recorded in the Cockpit Voice Recorder showed fuel/air explosion rather than an explosive device.

Boeing Company, however, decided not to close this possibility. It is believed that further metallurgical tests are being conducted.

External Source of Ignition

The possibility of fire propagation from an external source to the center tank through the vent system was also investigated. Per witnesses, external source of ignition at the time of the accident was not observed.

Electrostatic

This possibility was deliberated on by the investigation group and with the atmospheric conditions at the time of the accident, the humidity was high and possibility of static discharge was very remote, if not impossible. This was eliminated.

Float Switch

The examination of the float switch at the Equipment Quality Assurance (EQA) Laboratory of the Boeing Company at Seattle revealed an unusual physical appearance. It was apparent that some metal portion was missing in the internal cavity of the switch body. This was initially suspected as a result of an internal arcing, but further inquiry with the manufacturer revealed that until three years ago, rework was performed whenever a switch failed quality control. The process required the drilling out of the defective float switch and the reinstallation of a new one. Per Boeing, evidence of machining and bits of aluminum were found in the switch body and the potting compound respectively.

If an electrical short circuit occurred inside the cavity of the switch, it would be impossible to ignite the fuel/air mixture in the tank due to the presence of a shielding conduit. Neither would it be possible for the switch to reach a high temperature to cause auto ignition of the explosive atmosphere because the high conductivity of the metal body which is mounted to a large metal plate would act as a heat sink.

Another possibility was presented, and although remote, it was not impossible. It was noted that the construction of the body of the float switch was actually made of two separate pieces and joined together with epoxy adhesive. These are a hollow aluminum

stem that houses the reed switch and an aluminum body which serves as mounting to the aircraft structure. With this construction, the metal stem could in fact be insulated from the switch body. If, by chance a non-design power is allowed to contact the stem of the switch with it insulated from the body, an arcing is possible between the stem and the magnetic float housing. This possibility would put the arcing outside of the switch and within the explosive atmosphere. A cold solder in the read switch of the bits of aluminum in the potting compound could possibly bridge the non-design power to the stem.

Per NTSB report, the energy required to produce an ignition is only 0.25 millijoules and within this amount, traces of arcing between the stem and the float housing might not be visible.

Inasmuch as the float switch is only powered during the time the refueling panel is in the open position and at the time of the accident the panel was closed, it was imperative to examine the float switch wiring for any non-design power source to support the above possibilities.

Float Switch Wires

The whole length of the float wire and the wire bundles were examined at the investigation site and the EQA Laboratories of Boeing. The examination revealed a damaged insulation leading to exposed wires in the float switch wires of approximately 9.525 mm (3/8 inch,) in the vicinity of the damaged insulation at the float switch, two other wires had damaged insulation. These were the 15 volt proximity sensor wire of the number 6 slat and the input wire to the right wing anti-ice valve supplying 115 VAC. It is believed that these wires were damaged during the manufacturing of the aircraft as other wire bundles were also found to be damaged, or the damage could have occurred during the installation of the logo lights.

No evidence was found to indicate whether arcing between the wires had occurred but the possibility of a direct contact exists. It was initially believed that the presence of a 115 VAC would damage the transient suppression diode across the center fuel valve, but further analysis of the circuit also showed that if there was a direct short in the float switch, there existed a possibility that the diode might not detect the altering current. Furthermore, the time required to have an igniting spark in the float switch could be so short to affect the diode or circuit breakers.

Fuel Quantity Indication System

Since this unit is inside the center fuel tank, it was one of the suspected sources of ignition. All the tank units and associated components covers were removed and later examined at the EQA laboratory of Boeing. The dielectric tests and functional test were all satisfactory. Furthermore, the power supply current to these tank units were found to be incapable of producing the necessary spark to cause an ignition. The unit was eliminated as an ignition source.

Fuel Booster Pumps

The two center wing tank booster pumps were examined at Seattle Boeing Plant and at the manufacturer's plant in the United Kingdom, GEC Aerospace Limited.

Dielectric tests of the unit were found to be below the limits due to the presence of water in the motor section of the pumps. The water ingress is believed to be contamination of fire fighting materials used during the accident. After thorough cleaning and drying the dielectric tests were found to be within limits.

It was also noted that the left pump showed evidence of wear in the carbon bearing that caused the inducer to rub against the pump housing.

Although it is understood that the pumps should be turned off whenever the low pressure lights are illuminated, it was noted that this was not emphasized. This does not even appear even on the B737-300 flight manual.

The flight deck crew reported that they turned on the center booster pumps during the cockpit preparation checks and verified that the low pressure warning light was extinguished. Although no fuel was loaded in the center tank, fuel from the surge tank in the wings would drain to the center tank. It is therefore presumed some fuel must have drained to the center tank for the pumps to create positive pressure and extinguish the low pressure warning lights. Shortly, or during the pushback, the master warning light illuminated indicating that both center booster pumps sensed low fuel pressure in their outputs. The crew cancelled the master warning light but did not turn off the booster pumps.

Both center fuel booster pumps were tested in explosive atmosphere at the manufacturer's facility in the United Kingdom. A series of tests ranging from 15 to 45 minutes were done without successfully igniting the explosive atmosphere.

Although the tests were done to approximate the conditions that existed during the accident, the probability rate of ignition is not known. It is also a known fact that ignition is possible with the rubbing of these two metals (i.e. stainless steel and aluminum alloy) according to the researches of Powell and Belinge (1985²) and Takaoka et al (1966³). We believe that the rubbing test conducted by Plessey in the certification of the pumps, or these tests that were conducted on the center booster pumps are not enough to conclude and negate the results of the researches that were done by Powell and Takaoka

We believe that further tests should be conducted on the compatibility of metals used in the fuel pumps to ensure that frictional spark or thermite reaction is impossible.

Conclusions

The source of ignition in this accident is not known at this time. The chances of pinpointing the exact source of ignition might be remote. It is therefore necessary to probe deeper into the suspected components before concluding this investigation.

In the investigation that was undertaken there is still some doubt on the elimination of the float switch and the booster pumps as ignition sources. We believe that the necessity of ensuring that the same conditions do not exist in the rest of the Boeing B737 aircraft utilized by air carriers in the Philippines is imperative if we were to preclude a similar incident. In the absence of an Airworthiness Directive issued by the FAA, the Aircraft Accident Investigation Board of the Air Transportation Office found it prudent to recommend the following action on the suspected components as precautionary measures pending the completion of the investigations:

1. A one time check of the air craft fuel system.

- Complied 26 May 1990,⁴

2. A visual and physical check of the logo light wiring from the center tank to the wing tips as well as the associated wire bundles.

- Complied 29 June 1990,⁵

3. A visual check of the float switch wiring for chaffed and damaged insulation from the float switches to the refueling panel.

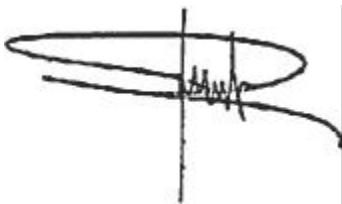
- Complied 10 August 1990,⁶

4. A one time check of the all center tank booster pumps. -
Complied 17 September 1990⁷
5. Amend the fuel booster pumps operating procedure to
emphasize and disallow the dry running of the pumps. -
Complied 15 September 1990⁸.

By the Aircraft Accident Investigation Board: 20 November 1990.



GALILEO L. BANAQUED
Chairman



RICARDO B. EXCONDE
Vice Chairman



DEO B. DEOCAMPO
Secretary/Member



SATURNINO S. DELA CRUZ
Member



ELFREN P. CALDOZA
Member



REUBIN B. STERNBERG
Accredited Representative

A P P E N D I X :

1. National Transportation Safety Board Report dated
1 August 1990
2. Powell, F., Ignition of fuel-air mixtures by hot surfaces and
sparks produced between stainless steel and aluminum alloy.
3. Takeokas, S., et al, Safety In Mines Research Establishment,
Ministry of Power, May 1968
4. Air Transportation Office (ATO) Directive dated 25 May 1990
5. Air Transportation Office (ATO) Directive dated 28 June 1990
6. Air Transportation Office (ATO) Directive dated 3 August 1990
7. Air Transportation Office (ATO) Directive dated 14 September 1990
8. Air Transportation Office (ATO) Directive dated 14 September 1990



U.S. Department of Justice

Federal Bureau of Investigation

In Reply, Please Refer to
File No.

26 Federal Plaza
New York, New York 10278
December 3, 1997

Honorable James E. Hall
Chairman
National Transportation Safety Board
490 L'Enfant Plaza East
Washington, D.C. 20594

Dear Chairman Hall,

I write to express again my views, concerns and objections to those portions of the public hearing, schedule to begin on December 8, 1997 in Baltimore, that address the criminal investigation into the TWA Flight 800 tragedy. As we have discussed previously, the FBI, exercising its jurisdiction and responsibility under the law, conducted an exhaustive and thorough investigation to determine if the Flight 800 tragedy was caused by a criminal act, particularly a bomb or a missile. After sixteen months, having exhausted all avenues of investigation, we found no evidence that this tragedy was the result of a criminal act and we placed the investigation in a pending inactive status. As we have discussed, the FBI has not closed the criminal investigation because of the possibility that new evidence could be discovered in the course of the continuing National Transportation Safety Board (NTSB) accident inquiry, from intelligence sources or wreckage that heretofore has not been found. The possibility of this occurring is, admittedly, remote. Nevertheless, until the NTSB has definitively determined an accidental cause for the crash, I believe it is prudent to withhold from public disclosure or discussion the identities of witnesses and the raw investigative details of the criminal investigation.

Simultaneous with the FBI's criminal investigation, the National Transportation Safety Board (NTSB), exercising its authority and responsibility under the law to investigate civil aviation accident investigations, conducted, and continues to carry out a massive, thorough and exhaustive examination to identify a non-criminal cause for the Flight 800 tragedy. It is our understanding that the results of the NTSB's accident investigation, to date, will be presented at the public hearing in Baltimore. The FBI is the primary criminal investigative

Sincerely,

Lewis D. Schiliro
Acting Assistant Director in Charge

agency of the government and decisions regarding the presence or lack of evidence of criminal activity are committed to and made by the FBI and the Department of Justice. I do not believe it is appropriate for the NTSB, an agency whose Jurisdiction is to conduct aviation accident investigations and which has no criminal investigative Jurisdiction, to examine the particulars of and to present the results of the criminal investigation at a public hearing, particularly when there is a possibility, albeit remote, that the criminal investigation could be reactivated based on new information.

Due to the enormity of the tragedy and the intensity of the public interest regarding the possibility of criminal activity in connection with the crash, the FBI took the extraordinary step of detailing the scope of the criminal investigative effort, announcing our conclusion and answering questions about the investigation at a news conference as well as providing briefings to the appropriate Congressional Committee and Subcommittee Chairs, ranking members of the minority, representatives of the families of the victims of Flight 800 and representatives of the governments of the foreign victims. At my press conference, which you attended, and at each of the briefings I reiterated what I said above regarding the status of the criminal investigation and concluded the press conference by inviting anyone with any information of possible criminality to contact the FBI. Since then, I have carefully monitored the public reaction to our announcement. To date, that reaction has been almost uniformly positive and there has been no serious questioning, public or otherwise, from any source regarding our investigative conclusions. Thus, from the standpoint of public information, I see no need to again examine and present the results of the criminal investigation.

Set forth below are the specific parts of the hearing, as set forth in the 11/29/97 5:56 AM draft witness list, to which we object and the bases for our objections.

3. PRESENTATION CIA VIDEO

For the reasons noted above, the FBI objects to the use of the CIA video at the hearing if the purpose is to examine the eyewitnesses' observations or negate the possibility that a missile caused the crash. Because they are the product of a criminal investigation and the remote possibility that the criminal investigation could be reactivate, the FBI also objects to requests to disclose or include in the public docket of any FBI FD-302s or summaries of FD-302s prepared by the NTSB that report the results of any interviews ore reinterviews of the 244 eyewitnesses whose reports were examined by the CIA in connection with its analysis and to calling any eyewitnesses to testify at the public hearing.

4. REVIEW OF WITNESS STATEMENTS PANEL.

As noted above, the FBI objects to the use of any of the 244 eyewitness FD-302's or summaries prepared from those FD-302s by the NTSB in connection with this hearing. As I have discussed with you previously, the FBI has serious reservations about the presentation by NTSB of expert testimony regarding the limitations of eyewitness observations. The FBI is well aware of the general issues relating to the reliability of eyewitness observations and testimony and factors those limitations into our criminal investigations. Many of the factors that affect the reliability of eyewitness testimony, e.g., age, visual acuity, position, stress, focus, etc. are peculiar to the individual eyewitness as well as the actual event viewed, e.g., lighting conditions, violence etc., I believe it is inappropriate to use "experts" to present general observations about eyewitness reliability and to apply those general observations to the particular situation presented by TWA Flight 800 when the "experts" have not had the opportunity to review the eyewitness reports or to evaluate the various factors as they relate to the particular eyewitnesses. In addition, because the experts have not had the opportunity to review/evaluate the particular eyewitnesses whose accounts were analyzed by the CIA and have not discussed with the CIA its evaluations of the witnesses' accounts, there is a risk that the expert presentations questioning eyewitness reliability will have the unintentional effect of undermining the CIA's work. As you know, I have always stated that the eyewitnesses are good people who told us what they saw, I believe that the presentation of expert testimony that could cast doubt on the eyewitness' veracity does not further the accident investigation and could complicate our efforts if the criminal investigation were to be reactivated.

The witness list does not explicitly indicate that you desire to use summaries prepared by the NTSB from FBI FD-302's reporting the results of interviews of individuals other than the 244 eyewitness reports analyzed by the CIA. While we object to the use of any of the FD-302s or summaries prepared from those PD-302s by the NTSB of the 244 eyewitnesses whose reports were reviewed by the CIA in connection with its analysis, we do not object to the use of and inclusion in the public docket of summaries prepared by NTSB of FBI interviews of other individuals to the extent their information may relate to mechanical or similar issues, e.g., fuelers, aircraft mechanics, passengers on the flight from Athens, etc., provided that the names of those individuals are deleted to protect their privacy and this office has the opportunity to review those summaries prior to their disclosure.

5. INVESTIGATION FOR MISSILE/WARHEAD IMPACT

6. e., f., g. Bombs/Explosives; Residue Examination
(exhibit 20I); PETN Findings

9. k. Small Explosive or Charges

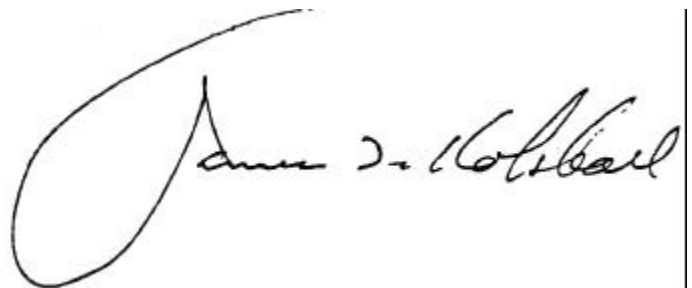
Because each of these items address matters addressed by the criminal investigation, the FBI believes, for the reasons stated above, that it is not appropriate for the NTSB to address them at the public hearing.

In addition to the general objection, we particularly object to discussion of the residue examination and the use of exhibit 20I, a FBI Laboratory report on the chemical analysis of the red residue found on the seats. As you know, this office and the office of the United States Attorney, Eastern District of New York is vigorously investigating a conspiracy to steal and the actual theft of pieces of the seats that contained this red residue in support of an "investigation" by an author/journalist. We fully expect this investigation to result, shortly, in a prosecution of those responsible. The residue examination and the FBI Laboratory report of the results of that examination will likely be evidence in this prosecution.

We do not object to a presentation of the metallurgical findings and are willing to allow Dr. Shabel, the outside expert retained by the FBI, to testify regarding his factual observations and his conclusion that his observations are consistent with an over pressurization of the center fuel tank, the break-up of the aircraft and the aircraft impact with the ocean.

Finally, I have discussed these concerns with Director Freeh and the United States Attorney for the Eastern District of New York, Zachary Carter, and they are in agreement with the position and concerns set forth above.

Sincerely,

A handwritten signature in black ink, appearing to read "James K. Kallstrom". The signature is written in a cursive style with a large, sweeping initial "J".

James K. Kallstrom
Assistant Director in Charge



National Transportation Safety Board

Washington, DC 20594

December 3, 1997

James K. Kallstrom
Assistant Director in Charge
U.S. Department of Justice
Federal Bureau of Investigation
26 Federal Plaza
New York, New York 10278

Dear Mr. Kallstrom:

We appreciate your letter of December 3, detailing the objections of the Federal Bureau of Investigation to certain of the issues and exhibits proposed for the December 8 National Transportation Safety Board hearing into Trans World Airlines Flight 800. We are especially grateful for your willingness to work within the tight timeframe that the approaching hearing necessitates.

After careful consideration of the issues you raise, I find, in my capacity as Chairman of the Board of Inquiry for this accident, that proper regard for the distinct jurisdictional mandates of our two agencies requires that NTSB accede to your request for withdrawal of those witnesses and exhibits dealing with eyewitness observations of the aircraft destruction. Additionally, we will honor the request for the exclusion of testimony regarding Exhibit 20I, FBI Chemical Study of Residue and the exclusion of any discussion of the results of the PETN tests. On the other hand, I believe it is incumbent on NTSB to proceed in this investigation, to the extent consistent with our respective mandates, in accord with normal NTSB practices and procedures. Consequently, with regard to research undertaken by NTSB independent of the criminal processes of your agency, I feel compelled to deny certain of your specific objections. However, in view of your general objection, I have asked staff to revise and delimit the format of several presentations, to make clear that the work undertaken was necessary (and usual) work of this agency in documenting accident wreckage and evaluating potential ignition sources. I will make a revised agenda available to you as soon as one is completed.

In making these rulings I wish to emphasize again that I do not see any fundamental disagreement between our agencies. I understand your request to be an objection to the *presentation of the results of the criminal investigation at a public hearing, particularly when there is a possibility, albeit remote, that the criminal investigation could be reactivated*. Hence, although it would normally be a part of NTSB practice to evaluate eyewitness observations of a particular accident, we have agreed not to do so next week, as the underlying data needed to make such an evaluation comprehensible is largely FBI work product, and you have declined to permit this to be made public at this point. Your declination is based on the remote possibility of a reactivated criminal inquiry into terrorism, and we appreciate your corresponding willingness to permit use of witness statements that run to mechanical or operational issues.

While we do seek to honor the request not to examine the results of the *criminal investigation* at our hearing, I believe that it would be inadvisable for NTSB to decline to engage its own work done outside of the criminal investigative process, even where there is some overlap in substance. Wreckage documentation, including the presence or absence of causal information, is a standard and necessary part of any NTSB investigation. Equally important to this s c investigation is the extent to which NTSB has undertaken the examination of any and all potential ignition sources. As you are aware, one of the items put in controversy by this accident is the aeronautical design choice between fuel cell protection limited to ignition control and protection which includes limitations on the presence of flammable vapors. Intelligent discussion of this issue is not possible in the absence of data regarding the full universe, to the extent it is or can be known, of potential ignition sources. NTSB has undertaken in this regard a number of studies, some of which do consider explosive charges, and I feel this material, like the material relating to wreckage documentation, needs to be included in our public hearing.

Let me reiterate my sincere gratitude for the cooperative spirit that has prevailed throughout this investigation, and let me assure you that I have given the most careful consideration to your requests here. I hope you can appreciate my belief that the decisions rendered are ultimately in the best interest of both agencies, as the preservation of our respective independence of action remains critical to our ability to earn public trust.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Hall", enclosed within a large, loopy circular flourish. The signature is positioned to the left of a vertical line.

Jim Hall
Chairman

Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

December 9, 1997

The Honorable George Tenet
Director
Central Intelligence Agency
Washington, D.C, 20505

Dear Director Tenet:

I am writing in regards to the role played by the Central Intelligence Agency in assisting the Federal Bureau of Investigation in examining the possibility-that the July 17, 1996 crash of TWA Flight 800 off the southern coast of Long Island, New York was caused by a missile, and the preparation of an animated simulation of the disaster.

As a senior member of the Transportation and Infrastructure Subcommittee on Aviation, I have been closely monitoring the federal government's investigation of the accident. I have several questions regarding the CIA's role.

- 1) Under what statutory authority did the CIA provide assistance to the FRI in this investigation?
- 2) In preparing the animation, why didn't CIA personnel consult more closely with personnel from the National Transportation Safety Board and Boeing?
- 3) The NTSB believes that TWA Flight 800 climbed to an altitude of no more than 15,000 feet following the explosion of the center wing fuel tank. The CIA animation claims that the plane climbed to an altitude of 17,000 feet. Why is there a discrepancy, and did the CIA consult with the NTSB prior to making this claim?
- 4) In preparing the animation, did the CIA consult any in-person interviews with any of the eyewitnesses?
- 5) In analyzing the possibility that the crash was caused by a missile, did the CIA consult with any U.S. military personnel who have expertise on surface-to-air missiles?
- 6) How much did the animation cost to produce, and were any CIA funds used to prepare the animation?

(next page)

- 7) If the answer to question number six is yes, what part of the CIA's budget was used to finance the animations?
- 8) Was the CIA's role in preparing the animation and the expenditure of funds authorized by the House and Senate intelligence committees?
- 9) Could the CIA provide my office with a video of the CIA animation?

Thank you for your time and cooperation. I look forward to your expeditious response.

Respectfully,

A handwritten signature in black ink, appearing to be 'JAT', written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/pm

- c: The Honorable Porter J. Goss
The Honorable Bud Shuster
The Honorable James Oberstaf
The Honorable John J. Duncan, Jr.
The Honorable William Lipinski

JAMES A. TRAFICANT, JR.
17th DISTRICT, OHIO

COMMITTEE:
TRANSPORTATION AND
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RANKING DEMOCRAT: PUBLIC BUILDINGS
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Congress of the United States
House of Representatives
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(216) 385-5921

December 22, 1997

The Honorable William Jefferson Clinton
President of the United States
The White House
Washington, D.C. 20500

Dear President Clinton:

I am writing in regards to Executive Order 13039 issued on March 11, 1997. The order excludes the Naval Special Warfare Development Group from the federal labor-management relations program. I have some questions regarding this order.

Why did the administration feel it was necessary to add the Naval Special Warfare Development Group to the list of federal organizations exempt from the federal labor-management relations program, when for the past 18 years the organization was not covered?

Were there any incidences involving the Naval Special Warfare Development Group that occurred prior to March 11, 1997 that indicated that having this organization covered by federal labor-management laws would compromise or jeopardize national security?

Was the Department of Defense consulted prior to the issuance of the Executive Order?

What steps is the administration taking to ensure that the rights of the men and women working in the Navy Special Warfare Development Group are fully protected?

What steps is the administration taking to ensure that the ability of members of the Navy Special Warfare Development Group to come forward with information regarding potential criminal acts is not in any way compromised?

Thank you for your time and consideration of this important matter. I look forward to your response.

Respectfully,



James A. Traficant, Jr.
Member of Congress

JAT/pm

JAMES A. TRAFICANT, JR.
17th DISTRICT, OHIO

COMMITTEE

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AVIATION

COMMITTEE:

SCIENCE

SUBCOMMITTEE:

SPACE

Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

December 23, 1997

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Mr. James E. Hall
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, S.W.,
Washington, D.C. 20594

Dear Chairman Hall:

As you know, as a member of the Transportation and Infrastructure Subcommittee on Aviation, I have been closely monitoring the federal investigation into the crash of TWA Flight 800 on July 17, 1996. I appreciate the manner in which you have responded to my previous inquiries. I have examined, in part, the voluminous amount of material presented at the National Transportation Safety Board's hearings in Baltimore, Maryland earlier this month. Having done so, I have some initial questions.

- 1) Can you provide me with a full explanation, from the NTSB's standpoint, as to why the eyewitness statements, test results, radar tapes, and other evidence were not presented at the NTSB hearings'?
- 2) It has been reported in the press that 96 eyewitnesses saw streaks that arose from the surface – not midway up on the horizon – prior to witnessing an explosion. Did the NTSB take these statements into account when producing your animation?
- 3) The CIA-produced animation maintained that TWA Flight 800 reached a maximum altitude of 17,000 feet, while the NTSB animation maintained that the flight never went above 15,000 feet. There are also other differences between the two animated simulations. Why were there differences, and why wasn't there closer coordination between the NTSB, FBI and CIA in producing an animated simulation?
- 4) In an effort to reduce redundancy and prevent the waste of taxpayer money, wouldn't it have been more prudent for the NTSB to work with the CIA to jointly produce an animated simulation?
- 5) Have NTSB personnel interviewed, in person, any of the eyewitnesses, including mechanics, ramp service personnel and gate agents?
- 6) It has been reported that some of the radar tapes have unexplained blips or anomalies that could be interpreted as a missile launch. Has the NTSB been able to conclusively determine that there is no evidence of a missile launch on any of the radar tapes?

(next page)

Mr. James Hall
December 23, 1997
Page Two

7) On page three of exhibit number 12-A, "Group Chairman's Factual Report of Investigation of Cockpit Voice Recorder," it was noted that the Dukane underwater locator beacon was operating normally. If this was the case, why did it take seven days to find the CVR? As far as the CVR being buried under debris, aren't these beacons designed to be heard in even the most extreme conditions?

8) Given the fact that it took seven days to locate the CVR and the Plight Data Recorder, in less than 150 feet of water, has the NTSB considered issuing any recommendations to improve the beacons in CVRs and FDRs?

9) On page 42 of exhibit 10A, "Flight Data Recorder (FDR) Group Chairman's Factual Report," there was a line drawn through the last line of data (at the 20:31:12 mark). I have some questions about this data:

- Why was there a line drawn through the last line of data?

- What is the NTSB's analysis as to what was happening to the aircraft between 20:31:11 and 20:31:12, when the last FDR reading was taken?

- The last line of FDR data indicates that from 20:31:11 to 20:31:12 the EPR of Engine 1 went from 1.30 to 1.14, the EPR on Engine 2 went from 1.29 to 2.46, the EPR on Engine 3 went from 1.29 to 2.36, and the EPR on Engine 4 went from 1.29 to 2.44. How does the NTSB explain the disparity in EPR between Engine 1 and Engines 2, 3 and 4 at 20:31:12?

- At 20:31:12 the VHF was keyed. Has the NTSB determined whether or not the key was caused by the explosion or one of the crew attempting to communicate with air traffic control?

10) Has the Federal Bureau of Investigation indicated to the NTSB how long they intend to keep the eyewitness statements and other evidence from being entered into the public docket?

11) Has the NTSB conducted any studies or had studies commissioned to determine the differences in flammability levels between Jet A1 fuel and JP-5?

12) The FBI has stated publically that, after a comprehensive investigation, it has found absolutely no evidence that the crash of TWA Flight 800 was caused by a bomb, missile or other criminal act. However, the FBI is withholding key pieces of evidence such as eyewitness statements because it doesn't want to compromise any future criminal prosecutions arising from yet to be uncovered evidence.

(next page)

Isn't it true of any NTSB accident investigation that evidence could be uncovered late into a probe indicating a criminal act was committed (e.g. sabotage)? That being the case, why doesn't the NTSB withhold from the public eyewitness statements from all airplane accidents?

- 13) Since the FBI and NTSB have ruled out the possibility that TWA Flight 800 was downed by a bomb or missile, what is the legal opinion of NTSB's counsel as to whether or not the release to the public of eyewitness statements, radar tapes and other evidence would compromise any possible future criminal investigation?
- 14) If the crash was not caused by a bomb or a missile attack, what other types of criminal acts, in the opinion of the NTSB, could have caused the disaster?
- 15) Other than Mr. Richard Bott, can you provide me with a list of the names of personnel employed by the Department of Defense who have assisted the NTSB in investigating the possibility that a missile caused the crash?

Thank you for your time and continued cooperation. I look forward to your expeditious response.

Respectfully,

A handwritten signature in black ink, appearing to be 'JAT', written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/pm

c: The Honorable John J. Duncan, Jr.
The Honorable William Lipinski



Washington D.C. 20505

13 January 1998

The Honorable James A. Traficant, Jr.
House of Representatives
Washington, D.C. 20515

Dear Mr. Traficant:

The enclosed memorandum responds to your questions on the Central Intelligence Agency's (CIA) role in the investigation of the July 17, 1996 crash of TWA Flight 800. Per your request, we have also included four November 18, 1997. If you have any further questions or requests, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink, appearing to read "George J. Tenet", written over a horizontal line.

George J. Tenet
Director of Central Intelligence

Enclosures

cc: The Honorable Porter Goss
The Honorable Bud Shuster
The Honorable James Oberstar
The Honorable John J. Duncan, Jr.
The Honorable William Lipinski

SUBJECT: Responses to Representative Traficant Regarding CIA's Role in the Investigation of the TWA Flight 800 Crash

Question 1: Under what statutory authority did the CIA provide assistance to the FBI in this investigation?

The possibility existed that the crash of TWA Flight 800 was caused by foreign terrorism, especially considering the speculation that a bomb or missile could have been involved. The CIA, in full accordance with the National Security Act of 1947 and Executive Order 12333, responded immediately to the FBI's request for assistance. This assistance included support from CIA analysts who monitor and assess foreign weapons threats to U.S. national security.

QUESTION 2: In preparing the animation, why didn't CIA personnel consult more closely with personnel from the National Transportation Safety Board (NTSB) and Boeing?

Because of the nature of the criminal probe, FBI guidelines dictated that minimum interaction take place between the CIA and either the National Transportation Safety Board (NTSB) or Boeing while the criminal investigation was in progress. With the approval of the FBI, however, the senior CIA aerodynamicist involved in the project consulted Boeing engineers to obtain some of the Boeing 747 technical parameters used in CIA's modeling. Also, again with the approval of the FBI, the NTSB reviewed the video when it was in its late stages of production. More than 40 minor changes recommended by the NTSB were incorporated into the video. NTSB managers and senior technical personnel reviewed the final version and concurred in its release. This video was aired during the FBI news conference on November 18, 1997.

Question 3: The NTSB believes that TWA Flight 800 climbed to an altitude of no more than 15,000 feet following the explosion of the center wing fuel tank. The CIA animation claims that the plane climbed to an altitude of 17,000 feet. Why is there a discrepancy, and did the CIA consult with the NTSB prior to making this claim?

NTSB and CIA analysts independently reached the major conclusion that the aircraft gained altitude just after it exploded and the front third separated from the rest of the fuselage. The conclusion that the aircraft rose is important because it explains why several eyewitnesses who saw the early stages of the disaster described "an ascending light". Before the video was released, CIA and NTSB analysts consulted at length concerning the different maximum altitudes; all agreed that the issue was not significant. Given the limited technical information available, the maximum altitude achieved by TWA Flight 800 can only be approximated.

SUBJECT: Responses to Representative Traficant Regarding CIA's Role in the Investigation of the TWA Flight 800 Crash

QUESTION 4: In preparing the animation, did the CIA consult any in-person interviews with any of the eyewitnesses?

No. All eyewitness reports used by the CIA were obtained from the FBI. However, missile experts from the Army's Missile and Space Intelligence Center accompanied FBI agents during some of the interviews early in the investigation.

QUESTION 5: In analyzing the possibility that the crash was caused by a missile, did the CIA consult, with any U.S. military personnel who have expertise on surface-to-air missiles?

Yes, in particular with personnel from the US Army's Missile and Space Intelligence Center.

It is important to note that the CIA's analytic effort was focused on determining if the eyewitnesses saw a missile. The ability of intelligence analysts to draw technically and logically supportable conclusions from incomplete and fragmentary information is the most appropriate background for this work. Each of the CIA analysts involved in the Flight 800 investigation had considerable experience analyzing foreign surface-to-air missiles; the lead analyst was for eight years chief of the CIA branch responsible for analyzing all foreign surface-to-air missile developments. Further, many of their managers, who were continuously involved in monitoring the analysts' progress, had decades of technical weapons analysis experience.

QUESTION 6: How much did the animation cost to produce, and were any CIA funds used to prepare the animation?

The total cost of the video was approximately \$40,000. This includes money spent for computer software to support the animation scenes of TWA Flight 800 and for approximately 200 copies of the video itself. (This software also will be used to support future projects.) The bulk of the cost, however, was for the time and expertise of a video specialist who was already under contract to work on other projects. We redirected the priorities of that contractor's tasks. All funds for the contractor, the software, and the video tapes were provided by the CIA.

QUESTION 7: If the answer to question number six is yes, what part of the CIA's budget was used to finance the animation?

The funding was part of the FY-97 budget for the Office of Transportation Issues in the Directorate of Intelligence.

SUBJECT: Responses to Representative Traficant Regarding CIA's Role in the
Investigation of the T1A Flight 800 Crash

**Question 8: Was the CIA's role in preparing the animation
and the expenditure of funds authorized by the House and Senate Intelligence
Committees?**

The funds were authorized. Decisions concerning what media to use to convey analytical results--written memoranda and reports, briefings, multimedia presentations, narrated and unnarrated videos, etc.--are made by CIA analysts and their supervisors on a daily basis. The CIA routinely uses video animation to document important analytical findings. In the case of the TWA Flight 800 work, it was agreed by analysts and their managers that a narrated, animated video was needed to explain the analytic methodology used and to make an understandable and convincing presentation of the evidence to non-technical audiences.

QUESTION 9: Could the CIA provide my office with a video of the CIA animation?

Four VHS copies are enclosed. If you need additional copies or would prefer a different format (for example, S/VHS, Hi-8, or Betacam), these can be provided.



U.S. Department of Justice

Federal Bureau of Investigation

In Reply, Please Refer to
File No.

26 Federal Plaza
New York, New York 10278

January 21, 1998

Honorable James A. Traficant
U.S. House of Representatives
2446 Rayburn House Office Building
Washington, D.C. 20515-3517

Dear Representative Traficant,

Enclosed, for inclusion in the record of the hearing before the Aviation Subcommittee on July 10, 1997, please find the FBI's responses to the written questions submitted by your letter dated October 1, 1997 to then Assistant Director in Charge James K. Kallstrom. A copy of these responses is being forwarded under separate cover to Chairman Duncan at the Aviation Subcommittee.

If you have any questions regarding these responses, please do not hesitate to contact me directly at (212) 384-2710 or my Chief Division Counsel, James Z. Roth at (212) 384-2722.

Sincerely,

Lewis D. Schiliro
Acting Assistant Director in Charge

- 1) In a recent newspaper article a spokeswoman for the Central Intelligence Agency publicly stated that TWA Flight 800 was definitely not brought down by a missile. Through your previous correspondence, I was aware that the CIA was working with the Federal Bureau of Investigation on the missile theory. I would like to know why the CIA felt it was necessary to issue such a categorical statement prior to the FBI reaching any final conclusions about the cause of the crash?

The FBI has no direct knowledge of the reason for the CIA statement and suggests that this question is more appropriately directed to the CIA.

- 2) Was the FBI aware of the CIA was going to go public with a statement?

No.

- 3) It is my understanding that the FBI has conducted tests involving missile warheads and airplane fuselages. Has the FBI conducted any tests involving continuous rod warheads?

An analysis conducted by the FBI and government missile experts eliminated continuous rod warheads as a cause of the Flight 800 tragedy. Therefore, no tests were conducted involving such warheads.

- 4) Has the FBI consulted with any active or retired U.S. military personnel with expertise on missile warheads? If yes, do any of these experts have experience with continuous rod warhead missiles?

The FBI consulted with missile experts from the U.S. Navy, Naval Air Warfare Center Weapons Division, China Lake, California who have experience with continuous rod warhead missiles.

- 5) If the answer to the above question is yes, have any of these experts been allowed to examine the wreckage of TWA Flight 800?

Yes. The China Lake personnel made several visits to the Calverton facility to examine the wreckage.

- 6) You indicated in your September 5, 1997 response that the FBI had an outside expert metallurgist examine the almost 200 holes, slits, punctures or penetrations identified in reconstructed areas of the aircraft, and that this task should be completed by September 30, 1997. Has this task been completed? If yes, what were the results?

The outside metallurgist's task has been finished. The metallurgist examined more than 1,500 penetrations, including 200 in the reconstructed portions of the aircraft. The metallurgist's examination did not find any signs of damage due to a bomb or a missile.

- 7) During the recovery process, was all the recovered wreckage taken to the Calverton, New York facility?

With the exception of certain technical items recovered from the wreckage, such as the flight recorders which were taken directly to NTSB in Washington, D.C., all recovered wreckage was taken to the Calverton facility.

- .8) If some wreckage was transported to sites other than Calverton, where were these sites? Was this wreckage eventually transported to Calverton?

All wreckage was transported to Calverton.

- 9) How much wreckage has been transferred to other locations for analysis?

One hundred eighty-five (185) items of evidence were taken to other locations for analysis, the vast majority going to the FBI and NTSB laboratories. Other laboratories used were the Department of Energy Brookhaven National Laboratory; the Defense Intelligence Agency Missile and Space Center Laboratory, Huntsville, Alabama; the National Aeronautic and Space Agency Laboratory and the facilities of Boeing Corp.

- 10) There have been news reports of orange-colored wreckage being recovered; wreckage not linked to TWA Flight 800. Was orange-colored wreckage in fact covered?

Several pieces of orange colored plastic or fiberglass debris were recovered.

- 11) If the answer to the above question is yes, has the FBI or the National Transportation Safety Board been able to identify the source of the orange-colored wreckage?

Yes. The FBI has conclusively determined that this orange debris is not part of a drone aircraft. Based on consultation with the United States Coast Guard, the FBI believes these pieces of debris are associated with marine buoys or flotation devices commonly used by fishermen and boaters.

- 12) Besides federal investigators, has the FBI or the NTSB asked any private citizens or officials from companies other than Boeing or TWA to inspect the wreckage of TWA Flight 800, as well as any unidentified wreckage that might have been recovered?

The FBI received on site assistance from metallurgists employed at the Brookhaven National Laboratory and from project engineers employed by Northrup-Grumman Corp. and Teledyne Ryan Corp., chief manufacturers of drone aircraft. The Northrup-Grumman and Teledyne personnel conducted a thorough review of all recovered wreckage and debris and found no evidence of drone aircraft structure or components.

- 13) If the FBI determines, based upon an exhaustive review of the available evidence, that the crash of TWA Flight 800 was not the result of a criminal act, will the FBI share with the committee all the information and evidence it collected to reach such a conclusion?

As was noted by then Assistant Director Kallstrom at his press conference in November, 1997, there is a possibility, admittedly remote, that new evidence could be discovered in the course of the continuing National Transportation Safety Board (NTSB) accident inquiry, from intelligence sources or wreckage that heretofore has not been found that could cause the FBI to renew its investigation to the cause of this crash. Therefore, the FBI is not prepared to share all the information and evidence it has collected. The FBI will continue to answer specific questions directed to the FBI by the committee as are authorized by Chairman Duncan.

- 14) In conversation my staff has had with the NTSB, it has been postulated by the NTSB that most of the eyewitnesses were drawn to the explosion by a noise, and that, given the distances involved, they could not have possibly viewed the actual initial explosion of TWA Flight 800. Has the FBI examined the characteristics of some anti-aircraft missiles to determine whether or not a missile traveling Mach One or faster will cause a sonic boom audible from a distance of up to ten miles?

Yes. Based on discussions with both the Central Intelligence Agency (CIA) and the Defense Intelligence Agency (DIA) a MANPADS in its trans-sonic state is closer to a bullet than an aircraft, therefore lacking the mass to create a concussive sonic boom. Further, owing to its size limitations (approximately three feet in length and two and three quarter inches in diameter) MANPADS will not create a sonic boom that would have been perceptible to the witnesses at the distances involved in these circumstances. In short, while a MANPADS system does create a distinct sound, it does not create a perceptible sonic boom, particularly at the distances involved in this case.

JAMES A. TRAFICANT, JR.
17th DISTRICT, OHIO

COMMITTEE
TRANSPORTATION AND
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Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

February 5, 1998

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The Honorable John J. Duncan, Jr.
Chairman
Subcommittee on Aviation
2251 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Duncan:

As you know, for the last several months, I have been examining all aspects of the federal government's investigation into the July 17, 1996 crash of TWA Flight 800 off the southern coast of Long Island, New York. I am writing to provide you with an update on the progress of my investigation.

My staff and I have interviewed a number of individuals involved in the investigation, in addition to several witnesses. A large amount of factual data has also been reviewed. I anticipate completing and submitting to the subcommittee a full report in about six weeks. While my examination is not yet completed, I have uncovered a number of unexplained anomalies about the crash and the investigation. The main issues I have identified to date include:

- The Federal Bureau of Investigation's refusal to release eyewitness statements and other key evidence even though the FBI announced last November that they found no evidence of a criminal act.
- The premature release, throughout the investigation, of information to the public by officials from the National Transportation Safety Board concerning probable cause.
- The fact that, after more than 18 months of intense investigation, no evidence has been uncovered to allow investigators to make a probable cause determination. Yet, investigators have already effectively closed down several avenues of investigation.
- Inconsistencies between some eyewitness statements and the break-up scenario being espoused by the NTSB.
- Problems related to the process by which the federal government investigates major airline accidents.

(next page)

The Honorable John J. Duncan, Jr.
February 5, 1998
Page Two

I believe that these, and other issues related to the TWA Flight 800 tragedy, warrant the close consideration of the subcommittee. Prior to the submission of my report, I would like to sit down with you and other Members of the committee to fully discuss my findings. I also believe that the subcommittee should hold hearings on all of these issues.

Thank you for your time and continued consideration. As always, don't hesitate to contact me should you have any questions or n additional information.

Respectfully,

A handwritten signature in black ink, appearing to be 'JAT', written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/pm

c: The Honorable Bud Shuster
The Honorable James Oberstar
The Honorable William Lipinski



National Transportation Safety Board
Washington, D.C. 20594

February 6, 1998

Honorable James A. Traficant, Jr.
Congress of the United States
House of Representatives
Rayburn House Office Building
Washington, D.C. 20515

Dear Congressman Traficant:

Thank you for your December 23, 1997, letter regarding the National Transportation Safety Board's investigation of the accident involving TWA flight 800. In your letter, you posed several questions regarding the public hearing held on the accident in Baltimore, Maryland, and the factual information placed into the Safety Board's public docket.

The following are the Safety Board's responses to your questions:

- (1) Can you provide me with a full explanation, from the NTSB's standpoint, as to why the eyewitness statements, test results; radar tapes, and other evidence were not presented at the NTSB hearings?

Response: During the public hearing, the information from the radar tapes, and tests and research conducted by the Safety Board were discussed. Additionally, all of the detailed information that supported these presentations were entered into the public docket.

Eyewitness observations were not considered during the public hearing due to objections posed by the Federal Bureau of Investigation (FBI) to the release of underlying witness statements and summaries of such statements. The Safety Board concluded that it would not be useful to enter upon a generalized discussion of witness observations until the parties to the investigation had been given an opportunity to review the material known to the Bureau and the Safety Board. We have had continued discussions on this issue with the FBI and are hopeful that additional information can now be made available to the parties and the public. The Safety Board would then use its party system procedures to review the eyewitness issue.

- (2) It has been reported in the press that 96 eyewitnesses saw streaks that arose from the surface – not midway up on the horizon – prior to witnessing an explosion. Did the NTSB take these statements into account when producing your animation?

Response: Yes, the Safety Board took eyewitness information into account-. The Safety Board does not discount witness statements, but considers all of the available data in determining the events related to an accident. While further work remains in this area, preliminary analysis suggests that there are no convincing statements regarding a streak originating from the surface, despite the fact that a few witnesses indicated such a sighting. Most witnesses indicated that they saw a streak of light originating from somewhere in the sky and moving to a higher altitude. The Safety Board's simulation and animation are consistent with these witness statements, as well as with information from the flight data recorder (FDR), radar data, the location of the wreckage, principles of aerodynamics, and six-degree-freedom flight simulations.

- (3) The CIA-produced animation maintained that TWA flight 800 reached a maximum altitude of 17,000 feet, while the NTSB animation maintained that the flight never went above 15,000 feet. There were also other differences between the two animated simulations. Why were there differences, and why wasn't there closer coordination between the NTSB, FBI, and CIA in producing an animated simulation?

Response: The FBI/CIA simulation and animation was based upon information provided by the FDR, the radar data before the explosion, aerodynamics, and flight simulations, as was the Safety Board's. However, the FBI and CIA also used detailed evaluations of witness statements related to witness positions, sound propagation, and elapsed time of observations. Their simulation was appropriate to show that a Boeing 747 would pitch up and climb, thus showing consistency with many witness statements. However, because of the lack of FDR data after the fuel tank exploded, it is impossible to match the radar data with any particular flight profiles.

The Safety Board simulation matches the CIA simulation when a straight-ahead flight path and pitch up are assumed. However, Safety Board staff incorporated a turn to the north to better match the primary radar targets that were associated with the aft section of TWA 800. The turn to the north requires energy that results in a lesser altitude gain. Both simulations show a climb, that corrected for viewing angle, would appear to be about 45 degrees. Various changes to the coefficients and to the roll angle time histories can produce varying altitude gains in either simulation. The exact flight path of the airplane cannot be determined from either of the simulations, but both approaches are valid to show that the airplane most likely climbed a substantial amount, probably to somewhere between 15,000 and 17,000 feet in altitude.

In the spring of 1997, the Safety Board was made aware that the CIA was involved in the FBI's investigation of the TWA 800 accident and that the CIA was developing an animation. We requested to see the animation and offered

assistance if needed. In October 1997, Safety Board staff were afforded the opportunity to review preliminary work of the CIA and to offer suggestions and advice based on the Safety Board's analysis of existing data.

- (4) In an effort to reduce redundancy and prevent the waste of taxpayer money, wouldn't it have been more prudent for the NTSB to work with the CIA to jointly produce an animated simulation?

Response: Because of the different nature of the two investigations it was not inappropriate for the FBI and the Safety Board to have developed separate animations. Further, it is notable that separately the FBI/CIA and the Safety Board produced two very similar simulations and animations. The cost of creating two separate animations is minor compared with the benefit of having two independent examinations of the same event.

- (5) Have NTSB personnel interviewed, in person, any of the eyewitnesses, including mechanics, ramp service personnel and gate agents?

Response: The Safety Board has interviewed many of the witnesses, including ramp personnel and flightcrews. The Safety Board will be entering into the public record the interview summaries of those witnesses.

- (6) It has been reported that some of the radar tapes have unexplained blips or anomalies that could be interpreted as a missile launch. Has the NTSB been able to conclusively determine that there is no evidence of a missile launch on any of the radar tapes?

Response: The Safety Board staff have examined all recorded radar data and there are no primary radar returns that appear close in distance and time to TWA 800 that are not attributed to known airplanes or to surface vehicles. Staff have examined a series of four primary targets that appear to create a track crossing behind TWA 800. Upon further exam, there are eight primary targets in that sequence. Those targets are false echoes from another airplane in the radar coverage. Further, within 10 minutes of the explosion, there were two other sets of false targets in that general area. False targets, which are discussed in the "Airplane Performance Factual Report," occur as a result of reflections off of buildings, terrain, and other environmental conditions.

- (7) On page three of exhibit number 12-A, "Group Chairman's Factual Report of Investigation of Cockpit Voice Recorder," it was noted that the Dukane underwater locator beacon was operating normally. If this was the case, why did it take seven days to find the CVR? As far as the CVR being buried under debris, aren't these beacons designed to be heard in even the most extreme conditions?

Response: The wreckage recovery operations, including location and recovery of the flight recorders, were performed for the Safety Board by the U.S. Navy's Supervisor

of Salvage. The Navy has done this for the Board in many accident investigations in the past. We (the Safety Board and the Navy) have had very good experience in locating CVRs and FDRs by beacon signal. In several cases, we have been able to locate CVRs and FDRs in much deeper water and more difficult sea bottom conditions by the beacon signal. However, each situation can be different, and as found in the TWA 800 investigation, it is possible for wreckage to attenuate the beacon signal. While historically the beacons have performed very well, we have been aware that the beacon's signal may be attenuated if wreckage or other material (such as the bottom of a river) covers the beacon. For example, the recorders on ValuJet were buried in mud and the signals could not be heard. Further, severe impacts have destroyed the beacons in some accidents.

- (8) Given the fact that it took seven days to locate the CVR and the Flight Data Recorder, in less than 150 feet of water, has the NTSB considered issuing any recommendations to improve the beacons in CVRs and FDRs?

Response: Until recently, beacon design and performance were not regulated by technical standards. The new standards have ensured a minimum level of operational capability. Considering the excellent recovery record of FDRs and CVRs, the Safety Board has no specific actions underway to improve beacon performance. However, the Safety Board is currently participating in the development of international standards to improve the mounting systems of beacons to ensure that they remain attached to the recorder. Further, the Safety Board will continue to monitor the issue of beacon reliability and will develop recommendations for improvements if warranted.

- (9) On page 42 of exhibit 10A, "Flight Data Recorder (FDR) Group Chairman's Factual Report," there was a line drawn through the last line of data (at the 20:31:12 mark). I have some questions about this data:

- Why was there a line drawn through the last line of data?
- What is the NTSB's analysis as to what was happening to the aircraft between 20:31:11 and 20:31:12, when the last FDR reading was taken?
- The last line of FDR data indicates that from 20:31:11 to 20:31:12 the EPR of Engine 1 went from 1.30 to 1.14, the EPR on Engine 2 went from 1.29 to 2.46, the EPR on Engine 3 went from 1.29 to 2.36, and the EPR on Engine 4 went from 1.29 to 2.44. How does the NTSB explain the disparity in EPR between Engine 1 and Engines 2, 3, and 4 at 20:31:12?
- At 20:31:12 the VHF was keyed. Has the NTSB determined whether or not the key was caused by the explosion or one of the crew attempting to communicate with air traffic control?

Response: The line was drawn through the data because these data were 25 flight hours old and were from an earlier flight. The FDR, in fact, stopped at the row of data that is struck out. The readout station requires several seconds of in-sync data

to produce reliable numbers once the 25-hour (flight hour) old data recovery starts. Since the old data may be starting in the middle of a data set, the data readout will be garbled and thus the data are considered unreliable for about 1 second. The VHF data has nothing to do with the explosion or crew actions related to the accident because it is also from a prior flight, not the final flight of TWA 800.

(10) Has the Federal Bureau of Investigation indicated to the NTSB how long they intend to keep the eyewitness statements and other evidence from being entered into the public docket?

Response: As noted above, the Safety Board and the FBI have had active discussions regarding release of these data and it is believed that a solution will be achieved in the near future.

(I 1) Has the NTSB conducted any studies or had studies commissioned to determine the differences in flammability levels between Jet A 1 fuel and JP-5?

Isn't it true of any NTSB accident investigation that evidence could be uncovered late into a probe indicating a criminal act was committed (e.g. sabotage)? That being the case, why doesn't the NTSB withhold from the public eyewitness statements from all airplane accidents?

Response: The Safety Board pursues in a public forum its primary mission of improving aviation safety. Therefore, it is the general practice of the Safety Board to release witness statements and other material during the course of its investigations. We do, however, cooperate with criminal investigations and, if requested, will work with law enforcement agencies to make such reasonable accommodation as to avoid compromising a criminal inquiry.

Response: The Safety Board is not the custodian of the witness statements held by the FBI. The Safety Board will enter into the public docket the witness statements taken by its investigators. All other factual information, including the radar data, has been placed into the docket. The Safety Board counsel is not expert on issues of criminal process.

(14) If the crash was not caused by a bomb or a missile attack, what other types of criminal acts, in the opinion of the NTSB, could have caused the disaster?

Response: The Safety Board's investigation has not found any evidence of criminal involvement in the accident. This question would be better directed to the FBI as it was their mandate to determine if any criminal activity played a part in the tragedy.

(15) Other than Mr. Richard Bott, can you provide me with a list of the names of personnel employed by the Department of Defense who have assisted the NTSB in investigating the possibility that a missile caused the crash?

Response: Members of the U.S. Navy's China Lake Air Craft Survivability Division that examined the wreckage for evidence of a missile impact were: Allan J. Wearer, Richard Bott, John Holtrop, Chuck Frankenberger, Dennis McKinney, and Terry Dougherty.

I trust this is responsive to your questions. Please contact me if you require any additional information regarding the Safety Board's investigation of this accident.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Hall". The signature is written in a cursive style with a large, circular loop at the beginning.

Jim Hall
Chairman



GENERAL COUNSEL OF THE NAVY
WASHINGTON, D.C. 20350-1000

11 February 1998

The Honorable James A. Traficant, Jr.
House of Representatives
Washington D. C. 20515-3517

Dear Mr. Traficant:

Thank you for your letter of 22 December 1997 to President Clinton concerning Executive Order 13039. I am answering on behalf of the President.

On June 10, 1996, the American Federation of Government Employees, Local 22, AFL-CIO, filed a petition seeking an election to represent the employees at the Naval Special Warfare Development Group (NSWDG). The Under Secretary of the Navy reviewed the matter and concluded that NSWDG has as a primary function intelligence, counterintelligence, investigative, or national security work and that it was appropriate to request a determination that the provisions of 5 U.S.C. Chapter 71 could not be applied to this organization in a manner consistent with national security requirements and considerations. Accordingly, the Deputy Secretary of Defense recommended that the President exclude NSWDG from coverage under the Federal Service Labor Management Relations Statute, 5 U.S.C. Chapter 71. The President approved this recommendation and issued Executive Order 13039.

The rights of the men and women working in NSWDG are fully protected in accordance with applicable legal requirements, including the Inspector General Act of 1978, as amended.

Sincerely,

Steven S. Honigman



GENERAL COUNSEL OF THE NAVY
WASHINGTON, D.C. 20350-1000

11 February 1998

The Honorable James A. Traficant, Jr.
House of Representatives
Washington D. C. 20515-3517

Dear Mr. Traficant:

Thank you for your letter of 22 December 1997 to President Clinton concerning Executive Order 13039. I am answering on behalf of the President.

On June 10, 1996, the American Federation of Government Employees, Local 22, AFL-CIO, filed a petition seeking an election to represent the employees at the Naval Special Warfare Development Group (NSWDG). The Under Secretary of the Navy reviewed the matter and concluded that NSWDG has as a primary function intelligence, counterintelligence, investigative, or national security work and that it was appropriate to request a determination that the provisions of 5 U.S.C. Chapter 71 could not be applied to this organization in a manner consistent with national security requirements and considerations. Accordingly, the Deputy Secretary of Defense recommended that the President exclude NSWDG from coverage under the Federal Service Labor Management Relations Statute, 5 U.S.C. Chapter 71. The President approved this recommendation and issued Executive Order 13039.

The rights of the men and women working in NSWDG are fully protected in accordance with applicable legal requirements, including the Inspector General Act of 1978, as amended.

Sincerely,

Steven S. Honigman

JAMES A. TRAFICANT, JR.
17th DISTRICT, OHIO

COMMITTEE
TRANSPORTATION AND
INFRASTRUCTURE

SUBCOMMITTEES

RANKING DEMOCRAT: PUBLIC BUILDINGS
AND ECONOMIC DEVELOPMENT
AVIATION

COMMITTEE:
SCIENCE
SUBCOMMITTEE:
SPACE

Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

April 2, 1998

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5555 YOUNGSTOWN WARREN ROAD SUITE 500
NILES, OH 44446
(216) 652-5649

109 WEST 3rd STREET
EAST LIVERPOOL, OH 43920
(216) 385-5921

Mr. Lewis D. Schiliro
Assistant Director in Charge
Federal Bureau of Investigation
26 Federal Plaza
New York, New York 10278

Dear Director Schiliro:

In my capacity as a member of the Transportation and Infrastructure Subcommittee on Aviation, I have been closely monitoring the federal government's investigation of the July 17, 1996 crash of TWA Flight 800 off the southern coast of Long Island, New York. I am in the process of completing my review for the Aviation Subcommittee, and have several additional questions for your office.

- 1) In previous correspondence, the Federal Bureau of Investigation indicated that it would not make public the eyewitness statements and other undisclosed evidence collected by the FBI because of the remote possibility that new evidence could be discovered in the course of the National Transportation Safety Board's continuing accident inquiry.

Given the fact that the NTSB's inquiry has yet to discover any such evidence, and is nearing a close, does the FBI intend to make public the eyewitness statements and other evidence in the TWA Flight 800 that has previously been withheld from the public?

- 2) In its analysis of radar tapes, has the FBI been able to positively identify every single aircraft and surface vessel that was in the proximity of TWA Flight 800 at the time of the accident?
- 3) If the answer to question number two is yes, can the FBI positively match every surface vessel and aircraft with an individual or individuals? Has the FBI interviewed every one of these individuals?
- 4) Can the FBI share with my office the results of its radar analysis, specifically, the identities of all the surface vessels and aircraft in the proximity of TWA Flight 800?

(next page)

Mr. Lewis Schiliro

April 2, 1998

Page Two

- 5) I applaud the FBI for the work it did, in conjunction with the Department of Defense, in examining the possibility that Flight 800 was struck by a missile or missile fragments. However, did the FBI fully examine the possibility that the accident may have been caused by an over pressure explosion outside the aircraft which did not result in any shrapnel or fragments hitting the aircraft but which caused enough over pressure to cause the nose of the aircraft to break off?
- 6) Has the FBI consulted with any eyewitness experts to explain why so many eyewitnesses allegedly saw a streak of light rising from the horizon (not half way above the horizon), even though such a scenario runs directly counter to the flight break-up scenario postulated by the NTSB and the Central Intelligence Agency?

Thank you for your continued cooperation. I also want to extend my sincere thanks to the hundreds of FBI agents who worked so diligently on this investigation. It was an enormous and challenging undertaking. The FBI should be commended for its persistence and dedication in attempting to solve this tragic mystery.

I look forward to your expeditious response.

Respectfully,

A handwritten signature in black ink, appearing to be 'J. Traficant', written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/pm

c: The Honorable Bud Shuster
The Honorable James Oberstar
The Honorable John J. Duncan
The Honorable William Lipinski

JAMES A. TRAFICANT, JR.
17th DISTRICT, OHIO

COMMITTEE
TRANSPORTATION AND
INFRASTRUCTURE
SUBCOMMITTEES
RANKING DEMOCRAT: PUBLIC BUILDINGS
AND ECONOMIC DEVELOPMENT
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COMMITTEE:
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SUBCOMMITTEE:
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Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

July 6, 1998

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(216) 385-5921

Mr. Lewis D. Schiliro
Assistant Director in Charge
Federal Bureau of Investigation
26 Federal Plaza
New York, NY 10278

Dear Director Schiliro:

Last April I wrote to you in regard to the Federal Bureau of Investigation's investigation into the 1996 crash of TWA Flight 800 (see enclosed). To date I have not received a response.

I am in the process of completing my report to the Aviation Subcommittee reviewing the federal government's investigation of TWA Flight 800. Your response to my April 2, 1998 letter would allow me to complete this review. As such, I would deeply appreciate a response as soon as possible.

Thank you for your time and consideration.

Respectfully,

A handwritten signature in black ink, appearing to be 'JAT', written over a vertical line.

James A. Traficant, Jr.
Member of Congress

JAT/pm

Enclosure

SUPPLEMENTAL MATERIALS



U.S. Department of Justice

Federal Bureau of Investigation

In Reply, Please Refer to
File No.

26 Federal Plaza
New York, New York 10278
July 27, 1998

Honorable James A. Traficant
U.S. House of Representatives
2446 Rayburn House Office Bldg.
Washington, D.C. 20515-3517

Dear Representative Traficant,

Enclosed please find the FBI's response to the questions submitted in your April 2, 1998 letter. We appreciate your patience and apologize for the delay in providing these responses. A copy of these responses is being forwarded under separate cover to Chairman Duncan at the Aviation Subcommittee.

If you have any questions regarding these responses, please do not hesitate to contact me directly at (212) 384-2710 or my Chief Division Counsel, James J. Roth at (212) 384-2722.

A handwritten signature in black ink, appearing to read "Lewis D. Schiliro", is written over a vertical line.

Lewis D. Schiliro
Acting Assistant Director in Charge

1. In previous correspondence, the FBI indicated it would not make public eyewitness statements and other undisclosed evidence collected by the FBI because of the remote possibility that new evidence could be discovered in the course of the NTSB's continuing accident inquiry. Given the fact that the NTSB's inquiry has yet to discover any such evidence, and is nearing a close, does the FBI intend to make public the eyewitness statements and other evidence in the TWA Flight 800 that has previously been withheld from the public?

Much of the FBI's investigative material has been subpoenaed in connection with the ongoing civil litigation over Flight 800, now pending in the United States District Court in the Southern District of New York. The FBI has agreed to produce relevant non-privileged material in response to the subpoena and has been working with the United States Attorneys office to craft an appropriate order to satisfy the requirements of the Privacy Act, Title 5, United States Code, Section 552a, and to fashion a protective order that will, essentially, restrict the use of this information to the litigation. The FBI has agreed to produce the results of eyewitness interviews to the parties with the names and addresses of the eyewitnesses redacted from the documents. This production will take place as soon as the Privacy Act and protective orders have been finalized.

In light of the FBI's planned production of eyewitness statements in response to the subpoena, in April, 1998, this office provided the NTSB with copies of the materials we will be producing in connection with the litigation. Since then, NTSB has been reviewing the material and the FBI is working with NTSB in an effort to satisfy NTSB's needs with respect to this material while at the same time protecting the FBI's concerns regarding making public the results of a criminal investigation into this still unresolved tragedy and to protect the legitimate privacy interests of those interviewed by the FBI. It is our understanding that NTSB, upon completion of its review and discussions with the FBI, will make these materials part of its public docket. We also note that, since early on in the FBI's investigation, NTSB has been afforded full access to the FBI's investigative work.

The FBI's investigation will remain in a pending inactive status at least until such time as NTSB determines a probable cause for the accident that excludes the possibility of criminal conduct being the cause of the Flight 800 tragedy. Therefore, except for our production in response to the subpoena issued in the civil litigation, which will be subject to a protective order, and the release of redacted eyewitness statements to NTSB, the FBI has no current intentions to release publicly other evidence in this case.

2. In its analysis of radar tapes, has the FBI been able to positively identify every single aircraft and surface vessel that was in the proximity of TWA Flight 800 at the time of the accident?

No. Following extensive analysis of raw radar returns by the FBI, the NTSB and an outside expert, in January, 1997 the FBI first noted the presence of a surface vessel, which, because of its speed of between 25 and 35 knots, is believed to be at least 25-30 feet in length, approximately 2.9 nautical miles from the position of Flight 800 at the time of the initial explosion. The analysis first noted the boat's presence at approximately 8:11 PM, traveling in a South, Southwesterly direction. The last radar contact was noted at approximately 8:45 PM. Despite extensive efforts, the FBI has been unable to identify this vessel. However, based on our investigative efforts, we are confident it was not a military vessel.

3. If the answer to question number two is yes, can the FBI positively match every surface vessel and aircraft with an individual or individuals? Has the FBI interviewed every one of these individuals?

With the exception of the vessel discussed in the response to question 2, all other vessels and aircraft noted on radar have been identified and appropriate interviews conducted.

4. Can the FBI share with my office the results of its radar analysis, specifically, the identities of all the surface vessels and aircraft in the proximity of TWA Flight 800?

No, for the reasons stated in response to question number 1, above.

5. I applaud the FBI for the work it did, in conjunction with the Department of Defense, in examining the possibility that Flight 800 was struck by a missile or missile fragments. However, did the FBI fully examine the possibility that the accident may have been caused by an over pressure explosion outside the aircraft which did not result in any shrapnel or fragments hitting the aircraft but which caused enough over pressure to cause the nose of the aircraft to break off?

The FBI, with the assistance of the missile experts at China Lakes and other experts who assisted in the investigation, considered the possibility of a proximity explosion, including a proximity explosion that did not result in shrapnel or fragments hitting the aircraft. According to the missile experts, the possibility that TWA 800 was destroyed by a proximity explosion that did not result in shrapnel or fragment damage to the aircraft is so extremely remote as to be virtually non-existent. According to the experts, such an explosion would be manifested by some inward protrusion on the aircraft. Extensive and

detailed metallurgical examination of the aircraft did not identify any damage that would support this extremely remote theory.

6. Has the FBI consulted with any eyewitness experts to explain why so many eyewitnesses allegedly saw a streak of light rising from the horizon (not half way above the horizon), even though such a scenario runs directly counter to the flight break-up scenario postulated by the NTSB and the CIA?

Of the all the individuals who reported seeing events in the sky, only approximately 20 reported a streak of light rising from the horizon. None of these individuals were closer than ten miles to the aircraft and some were much farther away. Given their distance from the aircraft and the aircraft's altitude at the time of the initial explosion, it could appear to those eyewitnesses that the streak of light they observed rose from the horizon. However, because the position and distance of the eyewitnesses are known, as is the position and altitude of the aircraft, a relatively straightforward mathematical analysis does show that what these people reported seeing was not, in reality, what occurred. Due to the acute angle of their observations, the trailing flame of the stricken aircraft would appear to be rising from the horizon. In addition, all of the missile systems which were analyzed as potentially involved in a missile engagement on the aircraft have sustainer motors which burn out several seconds after launch. Thus, there would be no visible flame from such systems above several thousand feet. Any streaks of light described by the witnesses as culminating in an explosion could not have been a missile engagement due to the fact that there would have been no continuous flame and the missiles themselves would not have been visible to the naked eye, particularly given the distances of the witnesses' observations. Thus, the observations of those who reported seeing a streak rising from the horizon are far more consistent with the FBI/CIA and NTSB scenarios.

The FBI fully understands the difficulties of eyewitness testimony. The FBI believes that the experts at the CIA who assisted the FBI in analyzing the eyewitness reports were more than qualified for this task.

Congress of the United States
House of Representatives
Washington, DC 20515 – 3517

April 8, 1999

The Honorable William Cohen
Secretary of Defense
The Pentagon
Washington, D.C. 20301-1155

Dear Secretary Cohen:

Last year, at the request of the Transportation and Infrastructure Subcommittee on Aviation, I examined the federal government's investigation of the July 17, 1996 crash of TWA Flight 800 off the coast of Long Island, New York. Last July I submitted my report to the subcommittee (see enclosed).

My report concluded that there is no credible evidence to counter the preliminary findings of the National Transportation Safety Board and the Federal Bureau of Investigation that the crash was likely caused by an internal explosion of fuel vapors in the center wing fuel tank. My report also concluded that there was no credible evidence that the crash was caused by a bomb or a missile. As part of my investigation, my staff interviewed key personnel at the NTSB, the FBI, the Suffolk County (NY) Medical Examiner's Office and the Department of Defense's China Lake facility. I also engaged in a lengthy correspondence with the NTSB, the FBI, the White House and the Central Intelligence Agency. Copies of this correspondence are included in the appendix of my report.

As I am sure you are aware, there are still a number of people who remain convinced that Flight 800 was downed by a missile. Some maintain that the United States Navy was responsible for firing the missile or in some way involved in the downing of the plane. I had originally intended to question the U.S. Navy about the proximity and actions of its vessels off the coast of Long Island on July 17, 1996. However, these questions were effectively answered through my questioning of the NTSB, the FBI and missile experts from China Lake. In addition, a member of my staff also closely examined the eyewitnesses' statements. Based on conversations my staff had with missile experts at China Lake and the Congressional Research Service, I am convinced that what the majority of the eyewitnesses described was Flight 800 in various stages of crippled flight – not a missile launch. These are the same conclusions that the CIA's missile experts came to when they were asked by the FBI to examine the eyewitnesses' statements.

Given all of the above-mentioned factors, I decided not to submit questions to the Pentagon. Regrettably, despite numerous assertions by my office, the NTSB and the FBI that

there has not been a “cover-up” relative to the Flight 800 investigation, many people continue to contact me with allegations that the U.S. Navy was responsible, in some shape or form, for this tragedy. In order to “dose the loop” on my investigation, I would appreciate it if you could answer the following questions for the record:

- 1) How many U.S. Navy v s, including submarines, were within 300 miles of the crash site of Flight 800 at the time of the crash?
- 2) Could you please detail the names, vessel types and location for each of these vessels?
- 3) Did any of the above-named vessels fire any missiles at any time on July 17, 1996?

Thank you for your time and consideration of this important matter. Should you or your staff have any questions relative to this request, please don't hesitate to contact me, or my chief of staff Paul Marcone, at 202-225-5261.

Respectfully,

A handwritten signature in black ink, appearing to be "J. Traficant", written over a light blue grid background. The signature is fluid and cursive, with a large loop at the start and a horizontal line extending to the right.

James A. Traficant, Jr.
Member of Congress

JAT/pm

Enclosure

THE SECRETARY OF DEFENSE
WASHINGTON

APRIL 12, 1999

The Honorable James A. Traficant, Jr.
United States House of Representatives
Washington, DC 20515

Dear Representative Traficant:

Thank you for your recent letter requesting answers to three questions in order to "close the loop" on the government's investigation of the July 17, 1996 crash of TWA Flight 800 off the coast of Long Island, New York. I have asked the General Counsel of the Department of Defense, Judith Miller, to promptly address this issue and she will get back to you as soon as possible.

With best wishes, I am

Sincerely,

[signed]

Secretary Cohen



GENERAL COUNCIL

**GENERAL COUNCIL OF THE DEPARTMENT OF DEFENSE
1600 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-1600**

June 7, 1999

The Honorable James A. Traficant, Jr.
U.S. House of Representatives
Washington, D.C. 20515-3517

Dear Representative Traficant:

I am writing in response to your April 8 letter to Secretary Cohen concerning the 1996 crash of TWA Flight 800 off the coast of Long Island.

You have asked how many U.S. Navy vessels, including submarines, were within 300 miles of the crash site at the time of the crash; the names, vessel types and location of these vessels; and whether any of the vessels fired misses on July 17, 1996. According to information supplied by the Navy, there were fifteen Navy vessels within 300 nautical miles of the crash site and one just outside the 300 nautical mile area. Of these sixteen vessels, eight were submarines. A list of the names and types of vessels, as well as a map depicting their approximate locations at the time of the crash, are enclosed. The Navy reports that none of these vessels fired missiles on July 17, 1996.

I hope that this responds to your concerns.

Sincerely,

A handwritten signature in cursive script, reading "Judith A. Miller", followed by a vertical line.

Judith A. Miller

Encl.

26 MAY 1999

DEPARTMENT OF THE NAVY

SERVICE AGENCY: U.S. NAVY (OPNAV N31)

APPROPRIATION ACCOUNT: N/A BUDGET

ACTIVITY: N/A

SUBJECT: Questions FOR THE RECORD FROM CONGRESSMEN JAMES A. TRAFICANT, JR., CHAIRMEN OF THE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE - CONCERNING TWA FLIGHT SOD CRASH JULY 17, 1996

Ref: Letter from Congressmen Traficant, Jr. dated April 8, 1999

Attachment: (1) Relative position of USN vessel's within 300 nautical miles of crash site.

Question #1: How many U.S. Navy vessels, including submarines, were within 300 miles of the crash site of Flight 800 at the time of the crash?

Response: At the time of the crash there were fifteen (15) USN vessels within 300 nautical miles (nm) of the crash site and one (1) just outside a 300 nm arc. Of these sixteen (16) vessels, eight (8) were submarines.

Question #2: Could you please detail the names, vessel types and location for each of these vessels?

Response: The following vessels were within 300 nm of the crash site, their relative location is depicted in (Attachment 1):

Surface Ships

USS NORMANDY (CG 60)

USS VELLA GULF (CG 72)

USS RAMAGE (DDG 61)

USS ESTOCIN (FFG 15)

USS KEARSARGE (LHD 3)

USS OAK HILL (LSD 51)

USS JOHN LENTHALL (AO 189)

USS NICOLAS (FFG 47) (just outside the 300 nm arc)

Submarines

USS ALBUQUERQUE (SSN 697)

USS OKLAHOMA CITY (SSN 714)

USS BOISE (SSN 764)

USS ALBANY (SSN 753)

USS WYOMING (SSBN 742)

USS SUNFISH (SSN 649) (DECOMMISSIONED 15 OCTOBER 1996)

USS TREPANG (SSN 674) (DECOMMISSIONED 4 JANUARY 1999)

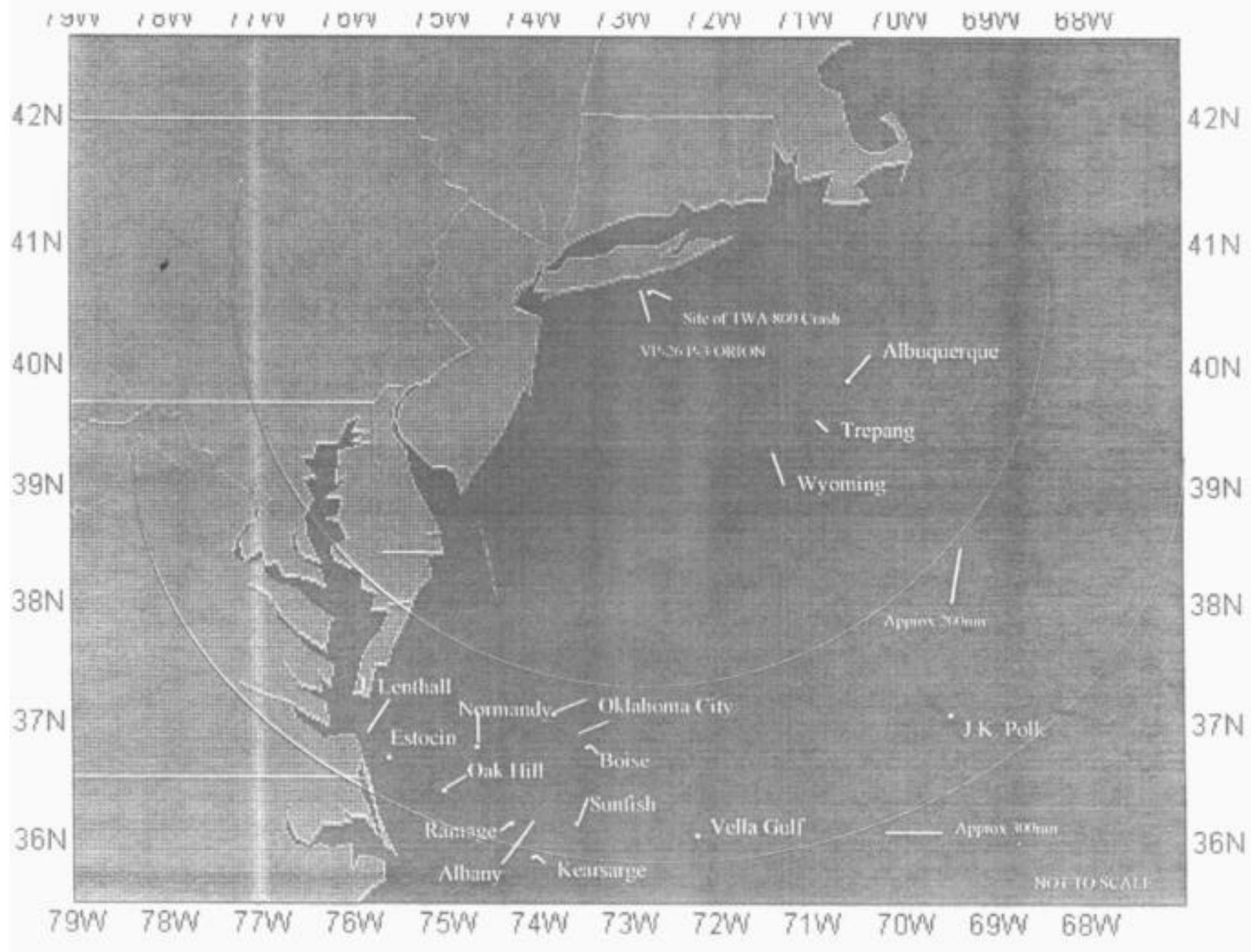
USS JAMES K. POLK (SSN 645) (DECOMMISSIONED 1 MARCH 1999)

Question #3: Did any of the above-named vessels fire any missiles at any time on July 17, 1996?

Response: No. None of the USN vessels listed above fired any missiles on July 17, 1996.

A handwritten signature in black ink, reading "Jack D. Punches". The signature is written in a cursive style with a vertical line to its right.

JACK D. PUNCHES
CAPTAIN, U.S. NAVY





Office of the Chairman

National Transportation Safety Board
Washington, D.C. 20594

December 28, 1999

Honorable James A. Traficant, Jr.
Congress of the United States
House of Representatives
Rayburn House Office Building
Washington, D.C. 20515

Dear Congressman Traficant:

Thank you for your November 15, 1999, letter in which you asked several questions about the National Transportation Safety Board's investigation of the July 17, 1996, accident of TWA flight 800. I appreciate your continued interest in a complete, accurate, and timely resolution of this investigation. Safety Board staff has prepared the following responses to your questions:

1. *Earlier this year I sent a letter to the Department of Defense (DoD) asking how many U.S. Navy vessels, including submarines, were within 300 miles of the crash site at the time of the crash. The U.S. Navy provided a detailed response in which it listed all of the vessels within 300 nautical miles of the crash site at the time of the crash (see enclosure #1). In reviewing certain addendums sent to my office by the NTSB, my staff came across a consulting report prepared by DoD's Joint Spectrum Center, JSC-CR-99-006, on the electromagnetic environment present at the time of the crash. As part of its analysis the center reviewed possible electromagnetic ship platforms. The report listed all of the U.S. Navy vessels considered for EME determination. Two ships listed in the report as being within 300 nautical miles of the crash site at the time of the crash, the USS Seattle and the USS Halyburton, were not on the list provided to my office by the Navy. The report also did not include in their analysis certain ships listed by the Navy, including the USS Oak Hill and the USS Oklahoma City.*

How do you account for these discrepancies? Does the NTSB believe that the center's report may have been compromised because it did not take into consideration all of the Navy ships in the area at the time of the crash?

Response: The Safety Board's original source of information about U.S. naval vessels operating off the shores of the middle Atlantic and northeastern States was from a Freedom of Information Act (FOIA) request filed by the press with the U.S. Navy. In response to this request, the Navy provided Global Command and Control System Status of Resources and Training Systems records. The Board developed a list of ships from this source, then refined the list by removing some ships from further review because other ships of the same class and emitter types were already on the list and were located closer to the accident site. This refined list of vessels was the source of vessel location information that the JSC used for its report.

Honorable James A. Traficant, Jr.
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After reviewing the list of surface ships and submarines in enclosure 01 to your letter, we find that in compiling the list of vessels for the JSC's evaluation, the Safety Board was aware of the location, name, and class of all of the vessels listed, with the exception of the USS ESTOCIN. Among the ships that the Board was aware of were the USS OAK HILL and USS OKLAHOMA CITY, which were specifically mentioned in your letter; however, there was no need for the JSC to include these vessels in its analysis because other vessels had similar emitters and were closer to the accident site.

Because the Navy did not include the USS ESTOCIN in the list of ships provided in response to the original FOIA request, it was not considered for analysis by the JSC. However, the JSC has informed the Safety Board that the emitters installed on this class of vessel were less powerful than those on other ships that were closer to the accident site and were included in the JSC report. Therefore, we do not believe that the JSC report was compromised by the Navy's omission of this vessel from the original list.

The Safety Board does not know why two ships (USS SEATTLE and USS HALYBURTON) were referenced in the JSC report but not in the Navy's response to your request. Perhaps the Navy can provide an explanation for this omission.

2. To clarify the record, how did the NTSB derive the time history used in the CVR and FDR reports?

Response: The Safety Board established a common time reference among (1) flight data recorder (FDR) data, (2) cockpit voice recorder (CVR) data, and (3) radio transmission recorders at the Boston Air Route Traffic Control Center (ARTCC) by correlating the last seven radio transmissions from the flight crew of TWA Bight 800. These Bight crew transmissions were recorded on the CVR, at the Boston ARTCC, and as microphone keying parameters on the FDR. The correlation points all agreed to within one second. The source of local time for the FDR and CVR was the Boston ARTCC.

3. Has the NTSB been able to determine precisely when the very loud sound picked up by the CVR occurred?

Response: The sound in question was recorded just prior to the recorder losing electrical power. Safety Board staff would not characterize this sound as "loud," but it was of greater amplitude than the normal background sounds that were recorded during the period preceding it. The increased amplitude sound heard on the CVR lasted about 0.124 seconds and continued through the end of the cockpit voice recording. The recording ended at 2031:12.5 Eastern Daylight Time.

4. Did the N'TSB utilize the expertise of other federal agencies or entities or private organizations in analyzing the FDR and CVR? If yes, could you provide the names of these agencies and/or organizations?

Honorable James A. Traficant, Jr.
page 3

Response: All work on the original FDR or CVR tapes was performed in the Safety Board's laboratories. Outside agencies that provided help to the Board included:

- Federal Bureau of Investigation
- National Aeronautics and Space Administration
- Oak Ridge National Laboratories
- Defense Evaluation and Research Agency of the United Kingdom (UK)
- South Hampton University, UK
- Air Accidents Investigation Branch, UK
- Bureau Enquetes Accidents, France

5. *When will the NTSB's report on the tests conducted in Bruntingthorpe be made a part of the public docket?*

Response: The Safety Board's factual report on these tests is in the public docket and it has been placed on the Board's web site. A copy of that report is enclosed for your information.

We hope this response adequately addresses your concerns. Please do not hesitate to contact us if you have further questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Hall". The signature is written in a cursive style with a large, circular initial "J" and a stylized "H".

Jim Hall
Chairman

Enclosure



Office of the Chairman

National Transportation Safety Board
Washington, D.C. 20594

December 28, 1999

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Jim Hall
Chairman

Enclosure